THE LANCET

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

Telegrams—LANCET, WESTRAND LONDON. *Telephone*—TEMPLE BAR 7228 & 7229. *Offices*—423, Strand, London, W.C.2

No. XIII. of Vol. II., 1929. LONDON, SATURDAY, SEPTEMBER 28, 1929 Pp. 120—Price 1s.
No. 5535. Vol CCXVII. Founded 1823. Registered as a Newspaper. Published Weekly. Annual Subscription Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 2

With 25 Illustrations, including 17 Plates. Demy 8vo. 9s. net; postage 5d.

STERILITY IN WOMEN:
DIAGNOSIS AND TREATMENT.
By SIDNEY FORSDIKE, M.D., B.S. (Lond.), F.R.C.S., Surgeon to the Hospital for Women, Soho Square, London, &c.
"Shows . . . evidence of rich personal experience; will well repay the most careful study."—THE LANCET.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

CANCER OF THE BREAST
AND ITS TREATMENT.
By W. SAMPSON HANDLEY, M.S., M.D. Lond., F.R.C.S. Eng.
Second Revised Edition. With 82 Illustrations. 30s. net.
Published for the Middlesex Hosp. Press by John Murray, London.

NOW READY. 4/6 net.
THE TREATMENT OF
CHRONIC DEAFNESS
BY THE ELECTROPHONÖIDE METHOD OF ZUND-BURGUET.
By GEORGE C. CATHCART, M.A., M.D.,
Consulting Surgeon to the Throat Hospital, Golden-square.
Oxford University Press, Amen House, London, E.C.4.

EARLY MENTAL DISEASE
(No. 2 of THE LANCET EXTRA NUMBERS).
A CONCISE GUIDE TO PSYCHOLOGICAL MEDICINE.
Demy 4to. 200 Pp. Limp Cloth.
Price 12s. net; Post free 12s. 6d. net.
London: THE LANCET Ltd., 1, Bedford Street, W.C.2.

OPHTHALMIC SURGERY
including the Author's
OPERATION FOR IMMATURE CATARACT.
By V. NESFIELD, F.R.C.S. Eng., Major I.M.S. (retired).
Ophthalmic Surgeon, The Queen's Hospital for Children, London, E.
Demy 8vo, with illustrations. 9s., postage 6d.
London: H. K. Lewis & Co. Ltd., 28, Gower Place, W.C.1.

BY C. HAMILTON WHITEFORD, M.R.C.S., L.R.C.P.
SURGICAL "DON'TS" (AND "DO'S")
Second (Enlarged) Edition. 1928. Price 4s. net.
"Excellent, practical, and full of common sense."—Med. J. Australia.
"Racy, readable and short."—Bristol Med.-Chir. Journ.
ACUTE APPENDICITIS. Price 4s. net.
London: Harrison & Sons, Ltd., 44–47, St. Martin's Lane, W.C.2.

MOVABLE KIDNEY.
ITS ETIOLOGY, PATHOLOGY, DIAGNOSIS, SYMPTOMS AND TREATMENT.
By WILLIAM BILLINGTON, M.S.Lond., Ch.M.Birm., F.R.C.S.Eng.
Second Edition. Demy 8vo. 192 pages. With 14 Plates and 8 Figures in the Text. 12s. 6d. net.
Cassell & Company, Ltd., La Belle Sauvage, London, E.C.4.

A PAGE OF
SURGICAL BOOKS
PUBLISHED BY
SAUNDERS
See Saunders' Advertisement on page 3.

THE THOMAS SPLINT AND ITS MODIFICATIONS IN THE TREATMENT OF FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., CH.B.(EDIN.).
Pp. 152. 85 Illus., with X-Ray Photographs, 3 Charts. 15s. net.
Oxford University Press, Amen House, London, E.C.4.

THIRD EDITION. With many Illustrations. 12s. 6d. net.
TREATMENT OF DISEASES OF THE SKIN.
By KNOWSLEY SIBLEY, M.A., M.D., B.Ch.(Camb.).
London: Edward Arnold & Co., 41 and 43, Maddox-street, W. 1.

ON THE BREAST.
By DUNCAN C. L. FITZWILLIAMS, C.M.G., M.D., Ch.M., F.R.C.S. Ed. and Eng.
Royal 8vo. 456 pp. 2 Plates, 166 Illustrations. 30s. net.
LANCET.—"The book is packed with accurate clinical observations and bears evidence throughout of extensive clinical experience and wide reading on the part of the author."
Wm. Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

SYPHILIS AND VENEREAL DISEASES.
By C. F. MARSHALL, M.Sc., M.D., F.R.C.S. Eng., and E. G. FFRENCH, M.D., F.R.C.S. Edin., M.R.C.P. Lond., Lieut.-Col. R.A.M.C. (Ret.), late O.C. Military Hospital, Rochester Row, S.W.
Fourth Edition, revised and illustrated with 7 Coloured Plates and numerous Figures. Price 15s.
London: Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden.

MODERN TECHNIQUE IN TREATMENT.
Volumes I., II., III., and IV.
Demy 8vo, Cloth. Price 10s. 6d. net per volume.
Postage extra, single volume 9d., two volumes 1s.
For Contents see page 6.
London: THE LANCET, Ltd., 1, Bedford Street, W.C.2.
Sole Agents for India: Butterworth and Co.

NEW STUDENTS' BOOKS
FOR THE NEW SESSION

Remarkable Success. *Two Editions in 18 months.*
New (Second) Edition.
674 Illustrations. Two Volumes. 28s., postage 1s. 3d.
THE SCIENCE AND PRACTICE OF SURGERY
By W. H. C. ROMANIS and P. H. MITCHINER, Surgeons, St. Thomas's Hospital.

READY MIDDLE OF OCTOBER.
New (Second) Edition.
4 Coloured Plates. 274 Text-figures. 18s., postage 9d.
THE QUEEN CHARLOTTE'S PRACTICE OF OBSTETRICS
By Members of the Staff of the Hospital.

New (Third) Edition.
65 Illustrations. 15s., postage 9d.
APPLIED PHARMACOLOGY
By A. J. CLARK, M.C., M.D., Professor of Materia Medica and Pharmacology in the University of Edinburgh.

New (Second) Edition.
2 Plates, 12 Text-figures. 15s., postage 9d.
A TEXT-BOOK OF BIOCHEMISTRY
By A. T. CAMERON, D.Sc., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba.
With Foreword by Prof. SWALE VINCENT, M.D., F.R.S.E., F.R.S.C., Professor of Physiology, University of London.

London: J. & A. CHURCHILL, 40, Gloucester Place, Portman Square, W.1

"The Standard."

THOROUGHLY GOOD!

ZŌPLA STRAPPING for perfect satisfaction.

Constant in quality.
Characteristic grip prevents slipping.
Non-irritating.
Strong Cloth (various kinds).

SAMPLES ON REQUEST.

Preferred by Surgeons Everywhere.

LESLIES LTD., High St., WALTHAMSTOW, LONDON, E.17.

FOR TOXÆMIAS OF INTESTINAL ORIGIN

Kaylene-ol

ACTIVELY PREVENTS THE ABSORPTION OF TOXINS.

KAYLENE LIMITED, 7, Mandeville Place, London, W.1. *Telephone:* Welbeck 3553. *Telegrams:* Kayloidol, Wesdo, London.

VALENTINE'S PREPARATION
NUTRIO PER ME
VOLUME 1⅘ OZ.
MEAT JUICE.
The result of an Original Process of preparing Meat and extracting its Juice by which the elements of nutrition are obtained in a State ready for immediate absorption.
DIRECTIONS. Dissolve one teaspoonful of the Preparation in three tablespoonfuls of cold or warm water. Avoid boiling water changing the character of the preparation.

Valentine's Meat-Juice

For **Quieting** the **Irritable Stomach, Aiding Digestion** and **Sustaining** and **Strengthening, Valentine's Meat-Juice** is employed in **Hospital** and **Private Practice** in the treatment of

Diseases of Children.

Dr. Raphael Raimondi, *Consulting Physician of the Montmartre Nurseries, Paris, France:* "I use VALENTINE'S MEAT-JUICE with Nurslings eighteen months to two years old. These very Weak Babies derive great benefit from the use of this tonic preparation. I give it to Debilitated Infants, after they are eighteen months old, in doses of one teaspoonful in thirty grammes of boiled water twice a day, and to be continued for a month."

Park B. Tucker, M. D., *Health Officer, Hamilton, Bermuda:* "I have found VALENTINE'S MEAT-JUICE invaluable for teething children, who readily take and retain it when they refuse everything else. It has also proved very palatable and strengthening in all cases of irritable stomach, especially to that peculiar nausea so often complained of from the abuse of ardent spirits."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY,
RICHMOND, VIRGINIA, U. S. A.

A 45

THE LANCET

No. 5535. LONDON, SATURDAY, SEPTEMBER 28, 1929. CCXVII.

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

A REVIEW of the Nervous and Mental Aspects of Pernicious Anæmia. By DOUGLAS MCALPINE, M.R.C.P. ... 643

ORIGINAL ARTICLES.

Harmine in the Treatment of Chronic Epidemic Encephalitis. By T. R. HILL, M.R.C.P., and C. WORSTER-DROUGHT, M.R.C.P. ... 647

Actinotherapy: Some Clinical Results of Treatment. By ALBERT EIDINOW, M.B. ... 649

Importance of the Liver in Chemotherapy. By L. CUNNINGHAM, M.R.C.P., and M. M. DATNOW, M.D.—*(Illustrated)* ... 652

Congenital Ectodermal Defect. By Prof. A. W. FALCONER, M.R.C.P.—*(Illustrated)* ... 656

CLINICAL AND LABORATORY NOTES.

Prognosis in Malignant Melanoma. By H. H. GLEAVE, M.R.C.P. ... 658

Glycerin in Cæsarean Section. By MARGARET SALMOND, M.D. ... 659

REVIEWS AND NOTICES OF BOOKS.

A System of Bacteriology in Relation to Medicine. By various authors ... 665

Letters from Rome on Certain Discoveries Connected with Malaria. By T. Edmonston Charles, M.D. 666

The Toxæmias of Pregnancy. By H. J. Stander 666

The Expectant Mother and Her Baby. By Bodh Raj Chopra, M.B. ... 667

Gases and Liquids. By J. S. Haldane, M.D., F.R.S. 667

A Text-book of Pharmacology and Therapeutics. By Prof. H. A. McGuigan, Ph.D., M.D. ... 667

Physiotherapy. By H. E. Stewart, M.D. ... 667

Treatment of Cataract and Some Other Common Ocular Affections. By Lt.-Col. Henry Smith, M.D. ... 668

L'Année Médicale Pratique 668

British Journal of Children's Diseases ... 668

BRITISH MEDICAL ASSOCIATION.

Annual Meeting in Manchester: Section of Public Health: Maternal Mortality ... 660

Section of Neurology and Psychological Medicine: Diagnosis of Frontal Tumours ... 661

Section of Ophthalmology: Lagrange's Operation for Glaucoma. Minor Injuries of the Eye in Industry .. 663

LEADING ARTICLES.

THE TRAINING OF MIDWIVES ... 669

DYSENTERY IN GREAT BRITAIN ... 670

THE CORONER'S AUTHORITY 671

ANNOTATIONS.

Neglect of the Deaf ... 671

Diagnosis and Cure of G.P.I. ... 671

The Incidence of Vascular Syphilis ... 672

Non-Operative Treatment of Squint ... 673

Tonsillectomy and Pulmonary Abscess ... 673

Housing in the Irish Free State ... 674

Embolectomy ... 674

The Late Prof. W. H. Perkin ... 674

Venereal Disease on the China Station ... 675

The Physiology of Milk Production ... 675

Tropical Fevers of Short Duration ... 676

Our Change of Address ... 676

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.

Interpretation of the Wassermann Reaction in Adults. II. Positive, Negative, and Doubtful Reactions. By T. E. OSMOND, M.B. ... 677

SPECIAL ARTICLES.

Report on The Training and Employment of Midwives ... 680

The Fossil Man of Peking. By Sir ARTHUR KEITH, M.D., F.R.S. ... 683

The Medical Register: Untraceable Practitioners in 1929 ... 685

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps.—Royal Air Force.—Indian Medical Service ... 685

PUBLIC HEALTH SERVICES.

Reports of Medical Officers of Health: Surrey.—Wiltshire.—Norfolk.—Leicestershire.—Northamptonshire.—Holland . 686

Mental Hospital Reports . 688

Infectious Disease in England and Wales 688

CORRESPONDENCE.

Relation of the Tonsils to Rheumatic Conditions (Mr. Macleod Yearsley) .. 689

Displacement of the Mandibular Cartilage (Mr. J. Hogarth Pringle) 689

Radiographic Examination of the Lungs (Drs. L. S. T. Burrell and Stanley Melville) *(Illustrated)* 689

The Age of Marriage and of Consent (Dr. G. A. Auden) ... 689

The Stabilisation of "Vita" Glass (Mr. R. R. Byrne) *(Illustrated)* ... 690

Schistosoma bovis in South Africa (Dr. F. G. Cawston) 690

OBITUARY.

Edward Petronell Manby, M.D. ... 691

John Mallet Purser, F.R.C.P. ... 691

MEDICAL NEWS.

University of London: University College 692

Royal College of Surgeons of England ... 692

Hospitals and Road Accidents ... 651

Royal Waterloo Hospital .. 683

Bury Infirmary ... 683

Donations and Bequests .. 684

British Institute of Philosophical Studies ... 692

St. Mary's Hospital Post-graduate Course ... 692

Hospital Dinners ... 692

London Hospital Medical College ... 692

Royal Dental Hospital School of Dental Surgery 692

Royal Institute of Public Health ... 692

Courses in Genito-urinary Diseases ... 692

University of Birmingham 692

University of Durham, College of Medicine 692

Surgical Instrument Manufacturers Association ... 693

Foot Hospital for Manchester ... 693

Post-graduate Course at the London Hospital ... 693

Queen Alexandra Hospital, Cosham ... 693

Manchester Welfare Centres 693

Dudley Maternity Home .. 693

Asthma Research Council 694

New Casualty Department at Nottingham ... 694

NOTES, COMMENTS, AND ABSTRACTS.

"The Weekly Weather Report" ... 694

Ironstone and Lightning .. 694

A Cautionary Notice ... 694

Medical Diary ... 693

Appointments ... 693

Vacancies ... 693

Births, Marriages, Deaths 69

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY LIMITED

(FOUNDED 1892)

Registered Office: VICTORY HOUSE, LEICESTER SQUARE, W.C.2.

Telegrams: "MEDICAVERO, WESTRAND, LONDON." *Telephone:* REGENT 0611.

President: Sir JOHN ROSE BRADFORD, K.C.M.G., C.B., C.B.E., M.D., F.R.C.P., F.R.S.
Treasurer and Chairman of Council: C. M. FEGEN, M.R.C.S., L.R.C.P., D.P.H.
Trustees for the Reserve Fund:
Rt. Hon. LORD DAWSON, P.C., G.C.V.O., K.C.B., M.D., F.R.C.P. Sir JOHN ROSE BRADFORD, K.C.M.G., C.B., C.B.E., M.D., F.R.C.P., F.R.S. Sir HARRY BALDWIN, C.V.O., M.R.C.S., L.D.S.

The Society was founded for the following purposes: To protect, support, and safeguard the character and interests of legally qualified Medical and Dental Practitioners; to advise and assist Members of the Society in matters affecting their professional character and interests; and to indemnify them in regard to actions, etc., undertaken on their behalf.

SUBSCRIPTIONS:— There is an Entrance Fee of 10s., and an Annual Subscription of £1.

The Invested Funds of the Society exceed £38,100. The Society is fully insured to an unlimited extent against all adverse costs and damages which may be awarded against Members in any action which the Society undertakes on their behalf.

Forms of application for Membership and full particulars may be obtained from the Secretaries at the above address.

OXFORD MEDICAL PUBLICATIONS

Just Published:—

ORTHOPEDIC SURGERY

By **Sir ROBERT JONES, Bart.**, K.B.E., C.B., Ch.M. (Liverp.), F.R.C.S. (Eng., Irel., and Edin.), F.A.C.S. (U.S.A.); and **ROBERT W. LOVETT**, M.D., F.A.C.S.

Second Edition, revised, with the Collaboration of **NATHANIEL ALLISON**, M.D., F.A.C.S., **FRANK R. OBER**, M.D., and **HARRY PLATT**, M.D., M.S., F.R.C.S. (Eng.).

Pp. 823. **792 Illustrations.** **52/6 net.**

GASTRIC AND DUODENAL ULCER

By **ARTHUR F. HURST**, M.A., M.D. (Oxon.), F.R.C.P.; & **MATTHEW J. STEWART**, M.B. (Glasg.), F.R.C.P.

With the co-operation in the RADIOLOGICAL SECTION of **P. J. BRIGGS**, M.A. (Cantab.), M.R.C.S., L.R.C.P.

Pp. 562. **279 Illustrations.** **With 10 Coloured Plates.** **£3 3s. net.**

AN INTRODUCTION TO THE STUDY OF PHYSIC

By **WILLIAM HEBERDEN (1710-1801).** *(Now for the first time published.)*

With a Reprint of his "Some Account of a Disorder of the Breast." Prefatory Essay by **LEROY CRUMMER.**

This book is of unusual interest, as it embodies the first publication of a recently discovered manuscript, the existence of which was hitherto unknown. The second portion of the book contains the first recorded description of Angina Pectoris by Heberden, "The English Celsus," as the late Sir William Osler so well described this pioneer of Medicine.

Pp. 170. **6 Illustrations, 1 Portrait in Photogravure.** **10/- net.**

THE WORK OF MEDICAL WOMEN IN INDIA

By **MARGARET I. BALFOUR**, C.B.E., M.B., C.M.; and **RUTH YOUNG**, M.B.E., B.Sc., M.B., Ch.B.

With a Foreword by **Dame MARY SCHARLIEB**, D.B.E., J.P., M.D., M.S.

Pp. 217. **5 Illustrations. 1 Map.** **9/- net.**

Recent Issues:—

THE NERVOUS CHILD NET
By **HECTOR CHARLES CAMERON**, M.A., M.D. (Cantab.), F.R.C.P. (Lond.).
4th Ed. Pp. 257. 8 Plates **7/6**

AN INTRODUCTION TO PHARMACOLOGY AND THERAPEUTICS
By **J. A. GUNN**, M.D., D.Sc. (Edin.), M.A. (Oxon.), Professor of Pharmacology in the University of Oxford.
Pp. 220. Fully Illustrated **5/-**

NEPHRITIS, ITS PROBLEMS AND TREATMENT NET
By **T. IZOD BENNETT**, M.D. (Lond.), F.R.C.P.
Pp. 105. Illustrated **6/-**

ŒSOPHAGEAL OBSTRUCTION, ITS PATHOLOGY, DIAGNOSIS AND TREATMENT
By **A. LAWRENCE ABEL**, M.S. (Lond.), F.R.C.S. (Eng.).
Pp. 245. 132 Illustrations. 2 Coloured Plates **30/-**

COMPLETE CATALOGUE SENT ON REQUEST.

Oxford University Press

HUMPHREY MILFORD. Dept. "R," Falcon Square, London, E.C. 1.

Telephone: NATIONAL 2354. *Telegrams:* OXUNIPRES, CENT, LONDON.

A Review
OF THE
NERVOUS AND MENTAL ASPECTS OF PERNICIOUS ANÆMIA.

BY DOUGLAS McALPINE, M.D. GLASG., M.R.C.P. LOND.,

PHYSICIAN IN CHARGE OF THE DEPARTMENT FOR NERVOUS DISEASES, MIDDLESEX HOSPITAL; ASSISTANT PHYSICIAN, HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE.

FRESH interest in the subject of pernicious anæmia in all its bearings has dated from the appearance of Hurst and Bell's [9] paper on achlorhydria in subacute combined degeneration of the cord, Price-Jones's [15 16] observations on the constancy of megalocytosis in pernicious anæmia, and more recently the excellent results of Minot and Murphy's [11] liver diet.

I have here made an attempt to review the neurological and mental aspects of the disease in a wider sense than is usual in text-books, to deal with certain points in early diagnosis, and finally to consider the results of liver therapy on the nervous complications. For this purpose 24 cases have been studied. Although relatively few in number, they serve to illustrate the points mentioned above.

In the first place, with regard to the incidence of so-called "subacute combined degeneration of the cord" I will quote only one set of figures—namely, those of Woltman [20] who in 1919 examined the nervous system in 150 cases of pernicious anæmia. In just over 80 per cent. he found "indisputable evidence of destruction of nerve parenchyma."

PATHOLOGY OF SUBACUTE COMBINED DEGENERATION OF THE CORD.

There are points regarding the nature of the changes in the cord which are still unsettled, but the following, I think, fairly represents the general consensus of opinion. Two types of lesion occur: (1) Foci in which the myelin sheaths of the nerve-fibres are destroyed, resulting in the formation of numerous vacuoles. These foci are found in the white matter, especially in the posterior columns, cerebellar tracts and pyramidal tracts, both crossed and direct. They make their appearance first in the lower cervical and upper half of the dorsal region of the cord. They are irregular in shape and tend to occur near the periphery of the cord. This distribution suggests that they bear a close relationship to the small entering arterioles. These foci of degeneration constitute the essential lesion. (2) Secondary degenerations in the long tracts of the cord; these occur only in the more chronic cases and can be recognised by their more homogeneous distribution. They result from the destruction of the axis-cylinders, a further stage of the initial lesion. Most authorities are agreed that the posterior roots are not affected. With regard to the peripheral nerves, according to Buzzard and Greenfield,[3] they are healthy. Russell, Batten, and Collier,[17] in their original paper, written in 1900, described the pathological findings in nine cases; only one of these showed definite changes in the peripheral nerves. Yet Collier [5] has recently written "some degeneration is always present in the peripheral nerves." The literature contains very few references to this point and it is obvious that this part of the nervous system has not received the proper attention of those who have studied the pathology of this disease. The cases in which a careful examination of the peripheral nerves has been made are so few that no conclusions can be drawn from them. It may be remarked, however, that definite changes have been met but they are not constant.

EARLIEST SYMPTOMS OF INVOLVEMENT OF THE CENTRAL NERVOUS SYSTEM.

Various forms of *paræsthesiæ* are common at the onset, such as a sensation of tingling, numbness, pins and needles, coldness, tightness, &c. Later in the disease a feeling as if something were tied round the leg or a sensation of walking on cotton-wool is not uncommon. In eight cases pain in the lower limbs was a prominent feature, usually in conjunction with one of the other forms of paræsthesiæ. It was generally described as sharp and stabbing, sometimes being sufficiently severe as to interfere with sleep.

With regard to the distribution of the paræsthesiæ, they were always referred to the periphery of the limbs. In a few cases one limb was affected before the others but the distribution soon became symmetrical. In approximately half the cases the paræsthesiæ were first felt in the feet, the big toe being, not uncommonly, the starting-point; in all these cases the hands were affected at a later date. In eight cases the hands and feet were affected at the same time; in five cases the hands were attacked first. In one case a "pins-and-needles" sensation was felt in the fingers of one hand for seven years before becoming generalised. The paræsthesiæ tend to spread centrally, in the case of the arms from the fingers up to the elbows and in the legs from the toes up to the knees, thighs, and in some cases to the waist. Paræsthesiæ generally precede the onset of motor disability, either in the form of paresis or ataxia, by some months, and in two cases in this series by seven and eight years respectively, although in acute cases difficulty in walking is noticed within a week or two of the onset.

Alteration in the Reflexes.

A spastic paraplegia is commonly regarded as the usual form of the disease, the deep reflexes in the lower limbs disappearing shortly before death. The following table shows the condition of the reflexes in the lower limbs in 24 cases, when first coming under observation:—

Cases.	Knee-jerks.	Ankle-jerks.	Plantar responses.	Cases.	Knee-jerks.	Ankle-jerks.	Plantar responses.
6	++	++	↑	3	+	+	↓
2	+	0	↑	3	+	0	↓
3	0	0	↑	6	0	0	↓
1	+	+	↑↓				

From this table it will be seen that there were only 11 cases (45 per cent.) in which there was unequivocal evidence of pyramidal tract involvement.

INTERPRETATION OF SYMPTOMS AND SIGNS.

In the earliest stage of the disease there may be no loss of sensation in the extremities, despite the definite subjective sensations felt by the patient. Eventually, however, two varieties of sensory loss may occur: (1) Diminution or loss of vibration sense, either alone or occasionally accompanied by impaired postural sensibility in the toes and fingers. The other forms of sensation are unaffected. This type of dissociated sensory loss is explained by the commencement of the disease in the posterior columns, usually the columns of Goll, which convey the impulses of postural sensibility and vibration sense up to the sensory nuclei in the medulla. (2) Impairment of all forms of sensation in the periphery of the limbs in the "glove-and-stocking" distribution, so characteristic of a peripheral neuritis. In this series of cases these two forms of sensory loss occurred with about equal frequency when the patients first came under observation. The second type of sensory loss can best be explained by a lesion of the peripheral nerves. Further proof of this is afforded by the occurrence of pains "cramp-like" or sharp in the limbs, accompanied sometimes by definite tenderness. Such pains

certainly are due to effects of the neurotoxin on the peripheral sensory neurone. Pains in the lower limbs were a prominent feature in a third of the cases in the present series. When we come to study the reflexes, I have already shown that absent deep reflexes in the lower limbs, with or without an extensor plantar response, occurred in over half the cases. The abolition of the deep reflexes has been explained by the effect of the disease on the posterior columns. There is no anatomical proof, however, that the reflex arc passes through these columns. An easier solution to the problem would be to implicate the posterior root or posterior root entry zone. However, the consensus of opinion amongst those who have studied the pathology of the disease seems to be that these parts escape. Again, when looked at from the point of view of anatomy, the abolition of the deep reflexes on the basis of a cord lesion is equally difficult to explain. As previously stated, the cord is first affected in its middle third. Yet it is by no means uncommon to find the ankle-jerks disappearing early in the disease. This reflex is situated in the lowest part of the cord—viz., sacral segments 1 and 2. These points, therefore, suggest that the interruption of the reflex arc does not take place in the cord or posterior root, but in the peripheral nerve.

It is reasonable to deduce from this fact and the peripheral type of sensory loss that the peripheral sensory neurone is almost constantly affected, either alone for a time, or concurrently with the spinal cord.

Mental Changes in Pernicious Anæmia.

These are briefly dismissed in most text-book descriptions of the disease. That mental changes do occur more frequently than are supposed may be deduced from the fact that within recent years several important papers on this subject have appeared. Addison,[1] in his original description of pernicious anæmia, refers to "occasional wandering and indeed a terminal delirium." We are not here concerned with these terminal manifestations, but with those arising early in the disease. In 1905 Langdon,[10] in a paper entitled Nervous and Mental Manifestations of Pre-pernicious Anæmia, drew attention to a group of cases in which nervous and mental symptoms might precede the typical picture of pernicious anæmia. Amongst the mental symptoms he noted peevishness and a gradual mental deterioration, varied, however, by periods during which the patient more or less returned to normal. In these cases, when first seen, in addition to the mental changes, there might be symptoms and signs pointing to involvement of the spinal cord, prior to the development of the pernicious feature of the anæmia. His views were severely criticised, but with the knowledge that has accumulated since then regarding the disease it is now evident that such cases occur not uncommonly. With regard to the mental side of the question his views have recently received striking confirmation by the work of Warburg and Jorgensen,[19] which will be mentioned later. Their paper, incidentally, contains an excellent bibliography relating to the mental changes in pernicious anæmia. Only one or two of the more important papers on the subject will be mentioned. Pickett,[13] in six cases of pernicious anæmia, noted shallow confusion with impairment of ideas of time and space. Delusions, especially of a persecutory character, he believed to be common. Barrett,[2] in an important paper, studied the mental changes in 11 cases. In nine of these he made a histological examination of the brain. The commonest symptoms were delusions of persecution, sometimes systematised, disorientation in time and space, confabulation, irritability, but little mental deterioration. The blood picture in nearly all the cases was that of a severe pernicious anæmia. In over half the cases there was a psychopathic family history. Histologically all the cases showed varying degrees of destruction of the long tracts in the cord. The changes in the brain were not uniform but the commonest findings were: (1) rarefaction of perivascular nerve-fibres, (2) endarteritis, (3) changes in the nerve-cells, (4) in several cases areas of focal disintegration of the myelin sheaths.

Woltmann [21] described the histological changes in the brain in seven cases. Amongst his conclusions are the following: (1) Not only do degenerated areas, such as are typically found in the posterior and lateral columns of the spinal cord in pernicious anæmia, occur in the medullary portion of the brain, but they do so with about the same frequency, though their demonstration may be rendered more difficult. (2) In addition, there is sometimes a diffuse degeneration, which though it is, as a rule, somewhat more marked in the long association traces, also occurs in the short commissural fibres passing from one gyrus to another. (3) The grey matter is by no means immune from the destructive process, which usually occurs focally around the pyramidal cells, some of which may be destroyed. (4) Well-marked psychoses, such as are occasionally associated with pernicious anæmia, probably have little or nothing to do with these destroyed areas, but the milder mental manifestations, such as somnolence and apathy, may be dependent on them.

In the present series the mental condition of the patient was investigated in 17 cases. In 11 of these some departure from the patient's normal mentality was noted. In three cases this merely amounted to depression with lack of mental energy.

Depression with Lack of Mental Energy.

In none of these cases was the blood count below 3,500,000 red cells, so that anæmia, per se, could not be held responsible for the condition. In one of the cases marked improvement in the patient's mental outlook followed liver treatment. In one other the depression remained; in this case the patient had been on liver treatment for one year before coming under my observation and there had been no improvement in his neurological condition. The remaining case was as follows:—

Male, aged 50, was referred to me from the Western Ophthalmic Hospital on account of recent retinal hæmorrhages. Nothing of note was found in his cardiovascular system, and the urine was free from albumin. Further questioning of the patient elicited the fact, which he had not previously mentioned, that for the past three months he had noticed a numb feeling in his legs, and that his feet always felt cold. He showed a slight impairment to all forms of sensation below the knees, with loss of vibration sense below the level of the anterior superior iliac spine. The knee-jerks were present, but the ankle-jerks could not be obtained. The right plantar response was equivocal; the left flexor. The average blood count before treatment was as follows: R.B.C., 3,500,000; Hb., 77 per cent.; C.I., 1·05.

A fractional test-meal showed complete achylia. He was in hospital from December, 1927, for three months. His mental condition throughout was one of mild depression and indifference. He had never previously felt depressed. His blood picture slowly improved under liver treatment, but there was no corresponding improvement in his neurological condition. He committed suicide three months after leaving hospital.

Confusion with Failure of Memory.

Four cases showed a mild state of confusion, which varied in intensity in the same patient from time to time. Failure of memory, for both recent and past events, indifference and even apathy, slow cerebration, and a tendency to somnolence were the prominent features in these cases. The following is an example of this group.

Male, aged 61, was seen by me early in 1928. According to his son, following an "influenzal cold" in 1924, a marked change in his mentality was noticed. He had always been regarded as a man of intellectual type, but he then began to lose interest in his work and made elementary mistakes. He became childish in his general outlook on life, and often "seemed to be in a dream." This mental deterioration was gradual. In 1926 he developed numbness in his fingers and toes, which persisted. When examined in June, 1928, he appeared mentally dull and indifferent. His memory was markedly defective for both recent and past events. There were no hallucinations or delusions or disorientation in time or space. There was no definite paresis of the lower limbs. The knee-jerks were sluggish on admission to hospital, and

soon disappeared. The ankle-jerks were absent. The plantar responses were equivocal. There was hypoæsthesia to all forms of sensation below the knees. Vibration sense was diminished up to the level of the seventh rib. There was slight loss of postural sensibility. A blood count showed R.B.C., 3,570,000; Hb., 67 per cent.; C.I., 0·93. There was complete achylia. The Wassermann reaction was negative in the blood and cerebro-spinal fluid. As a result of three months liver treatment he lost 13 lb. in weight. His blood picture, however, showed slight improvement. On discharge there was little or no alteration in his neurological or mental condition. Since then he has continued liver treatment as well as hydrochloric acid. When seen on July 20th, 1929, his condition was about the same.

Toxic Psychosis.

In the following three cases a definite toxic psychosis, with symptoms of a paranoidal nature, was present.

Female, aged 57, was admitted under my care in March, 1929. She had enjoyed good health until the summer of 1927, when she began to experience numbness in the big toe of either foot, and at times sharp pains in her legs. Later a frozen feeling, with numbness, was felt in the hands. These symptoms became aggravated, and later difficulty in walking was experienced. She was inclined to be sleepy, depressed, and irritable. She thought that no one wanted her, that everyone was looking at her, and that her neighbours had taken a dislike to her. On admission she appeared depressed, but otherwise normal mentally. There was no history of depression in the past. There was slight paresis of both lower limbs, with loss of deep reflexes. Both plantar responses were flexor. There was "glove" anæsthesia in her hand and marked loss of all forms of sensation below the knees. A blood count showed: R.B.C., 2,950,000; Hb., 70 per cent.; C.I., 1·3. There was complete achylia. She was treated with half a pound of liver daily, and dilute hydrochloric acid. The mental symptoms quickly disappeared. The blood picture gradually improved. On discharge from hospital on March 22nd: R.B.C., 4,932,000; C.I., 0·95. The paræsthesiæ had become much less pronounced, and she was able to walk with the support of a stick. In June, 1929, she reported herself as still further improved.

Male, aged 46, was admitted into Maida Vale Hospital, under the care of my colleague, Dr. A. Feiling, in April, 1924. In October, 1922, he first complained of pain and numbness in the ankles, which gradually spread up to the thighs. In September, 1923, he was admitted to the National Hospital, Queen-square, where a diagnosis of subacute combined degeneration of the cord was made. After about a month in hospital he became mentally confused and suicidal. He was discharged to an infirmary, but made a good recovery within a few weeks. In March, 1924, the left leg became weak, and he was unable to walk. On examination in April, 1924, he appeared pale and depressed. There was a typical glossitis. The legs were spastic, with double extensor plantar responses. There was hypoæsthesia to cotton-wool and pin prick below the knees. Vibration sense and postural sensibility were much impaired. A blood count showed: R.B.C.; 3,200,000; Hb., 65 per cent.; C.I. 1·0. There was complete achylia. At the beginning of June, 1924, he developed persecutory ideas; he thought that his food was being poisoned, and that everyone was against him. He discharged himself from hospital, and died in July, 1925.

The following case is of especial interest. Female, aged 41, early in 1925 first experienced a tingling sensation in the ring and little fingers of the left hand, followed later by a pins-and-needles sensation in the same fingers, an aching and cold feeling around the ankles, and dull aching pains in the feet and legs. In March she noticed that her walking was affected. In May she was admitted to the West Middlesex Hospital on account of the pains in the legs and vomiting. After three days there she became excitable and at times violent. She took off all her clothes, refused to eat, thought she had been cut up, and threatened to commit suicide because she was being ill-treated. She was transferred to Springfield Mental Hospital on May 20th.

I am indebted to Dr. R. Worth for permission to use the notes, of which the following is an extract:—

Past and Family History.—She had never before suffered from any form of nervous breakdown. One sister had been insane for a week at the climacteric. Otherwise there was no psychopathic history in the family.

On admission she showed some clouding of consciousness. She was not disorientated, but her memory for recent events was very poor, for current and remote events fair. She was suffering from delusions—e.g., stated that she had been through an operation that morning. She was somewhat restless. She complained of abdominal pain, and there was a very offensive diarrhœa. No definite neurological signs were noted. There was slight motor weakness in the lower limbs. The deep reflexes were active, and the plantar responses flexor in type.

June 2nd, 1925.—Mental condition about the same, but depression more marked than on admission. Abdominal pain still complained of, and diarrhœa continues. 3rd: Quiet; rather confused. Memory for current events, poor. Signs of colitis abating. 10th: Improvement in mental condition. She answers questions sensibly and is beginning to take an interest in her surroundings. Diarrhœa has now stopped, and she appears stronger. 17th: Much better mentally and physically. The only mental abnormality now present is a tendency to worry over trifles. July 24th: Improvement in mental condition has been maintained. August 8th: Discharged as recovered.

She was admitted to the Hospital for Epilepsy and Paralysis, Maida Vale, six weeks later—Sept. 22nd—under the care of Dr. C. M. Wilson, complaining of weakness and numbness of the legs, unsteadiness in walking, and a feeling as if she was walking on cushions. Her arms felt stiff and numb up to the elbows. Mentally she appeared somewhat emotional and her attention was poor. The tongue was red and glazed. There was slight paresis in the legs. The knee-jerks were active; the ankle-jerks were absent. The plantar responses were flexor. A blood count showed R.B.C., 3,288,000; Hb., 57 per cent.; C.I., 1·0. Wassermann negative in blood and cerebro-spinal fluid. There was complete achylia. She left hospital in December, 1925, improved. Unfortunately this patient cannot now be traced.

The chief interest in this case lies in the association between the psychotic state and the attack of diarrhœa, which was almost certainly a symptom of pernicious anæmia.

The Relation Between Mental Symptoms and Pernicious Anæmia.

Warburg and Jorgensen,[19] in a recent paper which should be read in the original, draw attention to the occasional association of psychoses and neurasthenia, with achylia gastrica and megalocytosis and discuss the relationship between this syndrome and pernicious anæmia. In their conclusions they state that there is a chronic pathological condition, associated with achylia gastrica, which covers a great many cases of neurasthenia and some cases of early psychoses, and that these mental disorders are often associated with mild spinal symptoms, glossitis, and megalocytosis. The epoch of pernicious anæmia is a rare and late stage in this condition, in which, not infrequently, one observes anæmia with a low colour-index at an early juncture. The majority of their cases improved with liver treatment. Their findings fit in well with Langdon's original conception of a pre-pernicious anæmia, in which mental or neurological symptoms may first dominate the clinical picture. With regard to the incidence of achylia in the psychoses, Ford-Robertson [8] has recently investigated this matter as part of an inquiry into the relationship between gastro-intestinal infection and mental disorder. He comes to the conclusion that gastric dysfunction, especially hypochlorhydria, is present to a much greater extent than in normal persons. In 14 cases (12 per cent.) he found absence of free hydrochloric acid after a test-meal; whilst 35 cases showed a diminished amount of free hydrochloric acid.

Reviewing the cases in the literature and those referred to in this paper, it seems certain that mental changes of varying severity occur not uncommonly in pernicious anæmia, sometimes in its earliest or pre-pernicious stage. The condition may range from a state of depression and lack of mental energy to a mild and even severe confusional psychosis. Frequently paræsthesiæ in the limbs may accompany or follow the mental symptoms, indicating the generalised effect of the neurotoxin on the central nervous system.

The early recognition of these symptoms, by means of an examination of the blood and gastric contents and their adequate treatment, may result in considerable improvement.

Diagnosis of Pernicious Anæmia.

What are the necessary criteria for the diagnosis of this disease? First and foremost comes *achylia*, which was present in each of the 21 cases in which a gastric analysis was made. A fractional test-meal is unnecessary. A stomach-tube should be passed before the test-meal is given in the morning, and the presence or absence of free hydrochloric acid determined in the resting gastric juice. Specimens taken one and two hours after the test-meal should be similarly tested. This can be done qualitatively by means of a drop or two of methyl-orange, which is added to the specimen. If free hydrochloric acid is present an orange colour develops. This test can be carried out by the general practitioner without any special apparatus and without taking up too much of his time.

Secondly comes the *examination of the blood*. This may show a definite picture of pernicious anæmia—e.g., low cell count with high colour-index and megalocytosis. Not infrequently, however, the red cells are but little reduced in number or may even exceed five millions; in such cases the colour-index may be low—e.g., 0·7 or 0·8. In the present series several cases which were under observation in hospital, and on whom blood counts were performed on an average three times a week before and after treatment with liver, showed a colour-index not exceeding 0·9. Campbell and Conybeare,[4] in a large series of cases of pernicious anæmia, found the colour-index to be above unity in only 60 per cent. of their cases. I think this point ought to be emphasised, as the majority of text-books lay undue stress on a high colour-index as an important feature in the diagnosis of pernicious anæmia. There is one feature of the blood picture which is constant before and probably after liver treatment—namely, an increased diameter of the red cells or megalocytosis. Price-Jones [15 16] originally described this condition and a method by means of which the average diameter of the red cells is arrived at. As a dried film is used, the method cannot be really accurate owing to alterations in the size of the cells. Its chief drawback, however, lies in the time required to do a count—namely, about two hours.

Pijper,[14] in 1924, devised an indirect means of measuring the *diameter of cells*. By means of a strong beam of light, which is allowed to pass through a lens of a known focal length and through a dried blood film, coloured rings are produced by diffraction, from which it is possible to calculate the diameter of the cells by measurement. I have tried this method, but was unable to obtain constant results.

Recently Eve[7] has described an instrument which he calls the Halometer. This is intended as a rough guide to the size of the red cells for the use of practitioners. It depends on the same theory as that underlying Pijper's instrument—namely, a thin blood smear acts as a diffraction grating and splits up the rays from a small source of light into a brightly coloured halo. I have used this instrument in a number of cases. I found that dried slides, two or three weeks old, gave too low readings. The blood film must be fresh. In three out of four cases, in all of whom the blood count exceeded 4½ million red cells, and who had been under treatment with liver for several months, the readings on the scale were just within the "pernicious anæmia zone." In one of the cases there was a low normal reading. This instrument certainly should provide the general practitioner with a means of substantiating a suspicion of pernicious anæmia, which could be further reinforced by gastric analysis and examination of the blood. An accurate method of estimating the size of the red cells, and at the same time a method which does not require any length of time, is still required. Lastly, the presence of a *Hunterian glossitis*, although not a constant feature of pernicious anæmia, frequently provides a valuable diagnostic link.

Effects of Treatment on Nervous Complications.

With the advent of liver treatment, and its remarkable effects on the blood picture, it was thought by some and hoped by many that a panacea for all the evils of pernicious anæmia had arrived. As far as the spinal cord symptoms are concerned this has not proved to be the case, except in the opinion of a few. Minot and Murphy[12] treated 31 cases of pernicious anæmia, which showed definite evidence of involvement of the central nervous system. They found that the paræsthesiæ and ataxia were improved, but that the reflexes remained unaltered. Recently developed symptoms of injury to the nervous system usually yielded more rapidly and satisfactorily than those due to old-standing lesions. They further state that no improvement usually takes place until the red cell count has reached four million. Symptoms have not definitely progressed or developed under adequate dietary treatment. Davidson, McCrie, and Gulland[6] found that in the tabetic type of subacute combined degeneration of the cord very marked improvement may occur, but in cases of the spastic type there was no improvement. A few other isolated cases have been reported, in some of which improvement has been noted; in others none. Much the largest series of cases are those described by Ungley and Suzman.[18] They report their observations in 61 cases of subacute combined degeneration of the cord, observed at the Royal Victoria Infirmary, Newcastle, since 1925. The large number of cases is striking, and suggests that pernicious anæmia is a commoner disease in that part of England than in London. Thirty of these cases were treated by liver therapy. Of the 31 cases that had no liver, 28 died within an average period of 4·6 months from the onset of the disease. Of those treated with liver, 17 were improved, eight remained stationary or became worse, and five died. The authors state that the results have been very promising. Numbness and tingling, as a rule, disappear entirely, postural sensibility is re-established more or less completely, and, as a result, incoördination and ataxia diminish or disappear. Further, vibration sense often returns, although in some cases it has remained absent. In three cases the plantar responses became changed from the extensor to the flexor type. Sphincter troubles also were improved. They conclude "that since all evidences of cord involvement may disappear, it is clear that the degenerative changes in the white matter in this disease are not of a permanent character." I have analysed their case reports, especially from the point of view of the degree of anæmia present. In 13 cases they give details of blood counts before and after liver treatment. The average number of red cells in these cases before treatment was 2,300,000. The approximate average after treatment was 5 million. In some of the 12 cases that did not improve on liver there is insufficient data, with regard to the blood counts, from which to draw conclusions. It is obvious, therefore, that the degree of anæmia should be taken into account when considering the possible action of liver treatment on the neurological symptoms as distinct from its effect upon the blood picture.

In my own series of cases the results were not nearly so favourable. Eleven cases have been treated with liver, and adequate doses of dilute hydrochloric acid have been given over periods exceeding six months. Four cases have made slight improvement, three are stationary, and four are worse. None of the four cases that have improved showed definite evidence of pyramidal tract involvement, and their deep reflexes were absent. All four cases in which the condition slowly progressed were of the spastic type. As several of the cases that were not treated by liver could not be traced after leaving the hospital, no comparison is possible between these and the liver-treated cases, but my impression is that life is prolonged in the latter group.

The general effects of liver treatment which have been observed are as follows: 1. An improvement in the blood picture, which, however, in some of the cases has been slow, even though 1 lb. of liver, or its equivalent,

in the form of an extract, has been given daily. 2. The general condition has improved, especially with regard to appetite and digestion. Glossitis, if present, has lessened. 3. Paræsthesiæ become less marked, but their total disappearance, even after months of regular liver treatment, has been rare. 4. No appreciable alteration in the reflexes has been noted, although in one case an extensor response became equivocal. 5. Ataxia has in some cases improved; all of these cases had walking exercises. 6. Mild mental symptoms usually disappear.

The spastic type of subacute combined degeneration of the cord, in whom the degree of anæmia is slight, as a rule slowly progresses despite treatment. Ungley and Suzman's conclusions are, I feel sure, too optimistic. The type of case which shows the best results is that in which the reflexes are diminished or lost and there is no pyramidal tract involvement. Two well-established points in treatment must not be overlooked: (1) eradication of all sepsis, especially dental; (2) the administration of dilute hydrochloric acid in ℥i doses thrice daily. Although liver treatment offers an efficient protection to the blood, it does not act in the same way against the effects of the intestinal toxin on the nervous system. The best method of combating the neurotoxin is to raise the patient's resistance to infection as far as possible by the removal of sources of sepsis, prevention of anæmia by means of liver, and elimination of the toxin originating in the upper intestinal tract by the administration of adequate doses of dilute hydrochloric acid.

Conclusions.

1. The neurotoxin, associated with pernicious anæmia, may attack all parts of the nervous system, cerebrum, spinal cord, and peripheral nerves, although not necessarily simultaneously.

2. In subacute combined degeneration of the cord the peripheral nerves are generally affected, especially in the so-called "tabetic type" of the disease.

3. Pernicious anæmia is a common cause of peripheral neuritis in persons over the age of 35. If the tongue be affected, the diagnosis becomes more probable.

4. Mental changes occur not uncommonly in pernicious anæmia. They range from states of depression, accompanied by loss of mental energy, to definite psychoses. They, like the nervous symptoms, may precede the characteristic changes in the blood by many months. More frequent examination of the gastric contents and of the blood, especially for the presence of megalocytosis, is called for in primary neuroses, and psychoses occuring after the age of 35, in view of the favourable results that may follow adequate treatment, instituted at an early stage.

5. The effects of liver treatment on the neurological symptoms are variable. In cases showing a marked degree of anæmia the improvement may be largely attributed to the favourable effect of such treatment on the blood and general condition. When an extensor response exists this improvement is slight; the progress of the disease may for a time be arrested, but not uncommonly it advances despite adequate treatment.

6. The type of case with abolition of deep reflexes, in which it is suggested that the peripheral sensory neurone largely bears the brunt of the disease, at least in the early stages, is naturally the most favourable.

7. The well-established rules regarding the eradication of dental sepsis and the administration of hydrochloric acid still maintain their importance.

I am much indebted to several of my colleagues at the Hospital for Epilepsy and Paralysis for permission to examine certain of the cases which were under their care.

References.

1. Addison, T.: Collected Works, New Sydenham Soc., 1868.
2. Barrett, A.: Amer. Jour. of Insanity, 1913, lxix., 1063.
3. Buzzard, E. F., and Greenfield, J. G.: Pathology of the Nervous System, London, 1921.

(*Continued at foot of next column.*)

OBSERVATIONS ON
HARMINE IN THE TREATMENT OF CHRONIC EPIDEMIC ENCEPHALITIS.

By T. R. HILL, M.B., M.R.C.P. Lond.,

ASSISTANT MEDICAL OFFICER-IN-CHARGE OF POST-ENCEPHALITIS UNIT, METROPOLITAN ASYLUMS BOARD;

AND

C. WORSTER-DROUGHT, M.D. Camb., M.R.C.P. Lond.,

PHYSICIAN TO THE WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM AND CONSULTING PHYSICIAN, POST-ENCEPHALITIS UNIT, METROPOLITAN ASYLUMS BOARD.

In 1928 Lewin reported the results of his experiments on the pharmacological effects of the plant *Banisteria caapi* and of an alkaloid extracted from it which was termed "banisterine." He found that in laboratory animals and in man banisterine produced stimulation of the central nervous system, followed, especially with larger doses, by depression. As a result of this work the alkaloid was tried in cases of post-encephalitic parkinsonian rigidity and was said to have produced benefit equal or superior to that obtained by administering hyoscine. Beringer (1928) reported excellent results as regards improvement in the rigidity, involuntary movements, and muscular weakness of parkinsonism. He regarded the drug as "a new alkaloid influencing the extrapyramidal nervous system."

Identity of Banisterine and Harmine.

Following Lewin's investigations, Merck stated that banisterine was physically and chemically identical with the better-known alkaloid harmine which is obtained from the plant *Perganum harmala*. Both possessed the formula $C_{13}H_{12}N_{20}$. Lewin was not convinced of the identity of the two alkaloids, but the claim was supported by the fact that *Banisteria caapi* was used in the preparation of *jagé*, an intoxicating drink manufactured by the Indians of Central and South America. Jagé had frequently been examined and the most recent results had left no doubt that the alkaloid it contained was harmine. Bayon isolated an alkaloid from jagé which he named "telepathine," but which was probably harmine. In addition it is significant that harmala seeds are used in the preparation of an intoxicant by natives of North Africa. The identity of banisterine and

(*References continued from previous column.*)

4. Campbell, J. M. H., and Conybeare, J. J.: Guy's Hosp. Rep., 1922, lxxii., 265.
5. Collier, J.: Oxford Medicine, 1921, vi., 358.
6. Davidson, S., McCrie, J. G., and Gulland, G. L.: The Treatment of Pernicious Anæmia, with Liver and Liver Extracts, The Lancet, 1928, i., 847.
7. Eve, F. C.: Brit. Med. Jour., 1929, ii., 48.
8. Ford-Robertson, W. M.: Gastro-intestinal Infection from Oral Sepsis in Mental Disorder, Sect. of Psych., Roy. Soc. Med., May, 1928, Brit. Med. Jour., 1929, i., 956.
9. Hurst, A. F., and Bell, J. R.: The Pathogenesis of Subacute Combined Degeneration of the Spinal Cord with Special Reference to its Connexion with Addison's (Pernicious) Anæmia, Achlorhydria, and Intestinal Infection, Brain, 1922, xlv., 266.
10. Langdon, F. W.: Jour. Amer. Med. Assoc., 1905, xlv., 1635.
11. Minot, G. R., and Murphy, W. P.: Ibid., 1926, lxxxvii., 470.
12. Same authors: Ibid., 1927, lxxxix., 759.
13. Pickett, W.: Amer. Jour. of Ment. Sci., 1904, cxxvii., 1032.
14. Pijper, A.: The Lancet, 1924, ii., 367.
15. Price-Jones, C.: Brit. Med. Jour., 1910, ii., 1418.
16. Same author: The Diameter of the Red Cells in Pernicious Anæmia, Jour. of Path. and Bact., 1922, xxv., 487.
17. Russell, H., Batten, F. E., and Collier, J.: Brain, 1900, xxiii., 39.
18. Ungley, C. C., and Suzman, M. M.: Newcastle Med. Jour., 1929, ix., 67.
19. Warburg, E. J., and Jorgensen, S.: Act. Scand., 1929, lxx., 193.
20. Woltman, H. W.: Amer. Jour. Med. Sci., 1919, clvii., 48.
21. Same author: Arch. Int. Med., 1918, xxi., 791.

harmine appears to have been established conclusively by the recent work of Gunn, in which he shows that the drugs produce similar pharmacological effects in laboratory animals.

The reputed benefit resulting from banisterine in parkinsonism and the suggestion that it was identical with the more easily procurable harmine led to the administration of the latter drug in cases of chronic encephalitis.

Pharmacology of Harmine.

Gunn states that Tappeiner in 1895 was the first to investigate the action of these alkaloids when he gave a general account of the action of harmaline. He described (1) motor stimulation of the central nervous system, with tremors and convulsions, followed or accompanied by paresis; and (2) slowing of the pulse-rate. His experiments with harmine gave similar results. Gunn in 1910–11 came to the conclusion that the actions of harmaline and harmine greatly resembled those of quinine, but that with regard to stimulation of the central nervous system their actions resembled those of some of the other cinchona alkaloids rather than quinine itself. His further work supports these conclusions, and he mentions that Flury obtained very similar results as far as the nervous system and circulation were concerned. Many of the actions of harmine are not relevant to any effect that it may exert in parkinsonism and can be briefly dismissed. It is said to cause relaxation of the intestine and spleen, and to be powerfully toxic to protozoa. It has been used with some apparent benefit in malaria. It produces contraction of the isolated parous uterus of the rabbit and progressive shortening accompanied by gradual lessening of response to stimulation of voluntary muscle (frog's gastrocnemius); the action on all forms of muscle appears to be peripheral.

As regards the central nervous system Gunn states that harmaline does produce slight and transient increase in the excitability of the "spinal reflex" of the frog, and he considers that harmine has a similar action. The main effect, however, is "a paralysis of the spinal reflexes." Gunn found that the chief symptoms produced by harmine in the rabbit were: (1) tremor and swaying of body; (2) impulse to continual movement, especially to "running" movements or "drum-beating" movements of the fore-limbs, followed by general paresis. The tremor was aggravated by voluntary movement. From the use of harmaline in cats Gunn deduced the occurrence of hallucinations, and states that Lewin observed the same result with banisterine in dogs. Of harmine the former observer expresses the opinion that "it is possible that in larger doses it will produce a kind of intoxication in man, seeing that it has been found to produce a pronounced stimulation of the cerebrum in the lower animals."

Harmine in Parkinsonism.

Stern stated in 1928 that he had obtained a few successes in the treatment of parkinsonism with the use of harmine, and the same year Rustige published the results of his experiments with the drug. The latter will be considered in some detail.

Rustige began by giving harmine in doses of 0·005–0·05 g. hypodermically, and later increased these doses in some of the cases; 18 patients received 27 injections in all. In addition, in two cases 0·01 g. was given by the mouth three times a day for several days. All the patients before the experiment showed marked bradykinesia with muscular rigidity.

No effect was noticed on the blood pressure or pulse-rate. In every case, 7 to 15 minutes after the injection of 0·02–0·05 g. harmine, 11 patients complained of giddiness, tinnitus, and a feeling of drunkenness, and, in addition, in one case, of faintness and nausea. The susceptibility of the patients to such symptoms varied greatly. In some the effects increased in severity and duration with an increase of dose. In practically all cases these symptoms disappeared in from 15 to 60 minutes. In one case of post-encephalitic tachypnœa (with a respiratory rate of 80 inspirations per minute), without other signs and symptoms, a diminution in rate to 20–40 per minute occurred 20 minutes after injection and lasted for hours, the breathing being deep and quiet.

A clear objective diminution of muscular rigidity was found in six patients, resulting from the injection of 0·02–0·03 g. harmine. In three of these cases the very pronounced rigidity disappeared entirely, but returned after an interval of 20 minutes. In all six cases it remained somewhat reduced for six hours.

In nine patients an effect was produced on the tremor, but it was variable in nature, and in some cases, if not in all the cases, it was probably the result of suggestion.

The most pronounced effect of the drug, both objectively and subjectively, was upon voluntary movement. In 13 patients (to whom, in all, 16 injections ranging from 0·01 g. to 0·05 g. were administered) a definite improvement in voluntary movement was seen, not only in speed but in vigour, range of movement, and in the ease of performance of rapid alternating movements. This effect was noticed 10 to 22 minutes after injection and had ceased objectively after one hour at the most. Also, the general bradykinesia appeared ameliorated and the patients quicker and freer. The mental state of the patients brightened, and their subjective improvement continued long after all apparent effect of the drug had passed away.

In two cases no effect was produced upon an oculogyric crisis. Harmine given by the mouth exerted no action. No enhancing of the effects of harmine mentioned above was produced by an increase of dose except that the toxic effects of vertigo, &c., were increased in severity and duration. No dose higher than 0·05 g. was given, and the majority received doses varying from 0·02 to 0·03 g.

Only four patients denied receiving benefit, and the author believed that he had avoided the effect of suggestion in other cases.

Personal Cases Treated with Harmine.

We have administered harmine to 38 cases of generalised parkinsonism following encephalitis lethargica. This group was composed of 16 severe, 13 moderately severe, and 9 mild cases. Twenty-two patients were males and 16 females, their ages ranging from 12 to 44 years, with an average of about 26 years. In 19 cases the drug was given by mouth and in 19 hypodermically, the two forms of administration being distributed evenly over the three types of case. The following tables represent the doses and the periods for which they were given in all but two or three cases:—

By Mouth.

0·01 g.	twice a day	for seven	days
0·02 ,,	,,	,, five	,,
0·03 ,,	,,	,, three	,,

Hypodermically.

0·02 g. every morning for seven days.
0·02 ,, three times a day for seven days.
0·04 ,, ,, ,, one day.

All cases prior to the administration had been under treatment with hyoscine given hypodermically. This treatment was stopped in all cases one week before beginning the course of harmine. During this week the condition of all the patients deteriorated greatly so that all except the mildest became very helpless, their ability to walk, talk, dress, and feed themselves being greatly impaired and in many cases completely abolished. Tremor, sialorrhœa, muscular rigidity, bradykinesia, bradyphrenia, and oculo-gyric crises were all much more evident. A few days after the completion of the harmine course, the hyoscine treatment was resumed and all the patients rapidly returned to the state in which they were prior to the omission of hyoscine.

The patients whilst receiving harmine showed no change whatever in their symptoms of parkinsonism at any time during the course. There was no amelioration of the syndrome even for a short period after each dose. Effects on the blood pressure, pulse-rate, muscular rigidity, bradykinesia, and bradyphrenia were particularly sought and none were found. Tremor, involuntary movements, and oculo-gyric crises were unaffected. The only signs or symptoms, subjective or objective, produced by the drug developed in seven patients 30 to 90 minutes after each administration of the highest of the hypodermic doses given—i.e., 0·04 g. In these cases there was a sudden onset of dizziness, generalised headache, usually nausea, and sometimes vomiting. The symptoms lasted about 30 minutes, though the headache occasionally persisted for some hours, and recurred after each dose.

After completion of the course of harmine and resumption of hyoscine hydrobromide gr. 1/100th hypodermically three times daily, nine cases were given, in addition, 0·02 g. of harmine hypodermically three times a day for 14 days with no increased benefit. Two or three cases were kept a little longer than the others on 0·02–0·04 g. harmine hypodermically, three times daily, before the resumption of the hyoscine, but no result other than the toxic effects referred to above was observed.

One case of post-encephalitic respiratory dysrhythmia, in a boy of 13 years free from parkinsonism, was treated with harmine. He was undersized and was suspected of being a mild example of the Lorain type of dyspituitarism, secondary to pituitary or hypothalamic involvement. His respiratory dysrhythmia was of the well-known type in which a deep inspiration is taken and the breath held for 10 to 20 seconds, being then expelled noisily and followed for a variable period by loud tachypnœa before the cycle begins again. In this case the administration of 0·02 g. harmine, three times a day hypodermically, appeared to produce from the start a diminution both in severity and duration of the attacks of apnœa and tachypnœa. Secondarily to this the patient slept better at night. This effect was maintained over a month of treatment with harmine.

Commentary.

The results of our experiments show that harmine administered in the doses given above exerts no perceptible effects, objectively or subjectively, other than the production of vertigo, nausea, and vomiting following the highest doses given hypodermically. These results differ greatly from the findings of Rustige and a few criticisms of his work are indicated.

Rustige's 18 patients received only 27 injections of harmine in all; consequently his conclusions as to the effects were drawn from the results of only one or two injections in each patient. That some of the apparent effects were "functional" and due to suggestion is admitted by the author, and the impression that most of them were probably so produced is gained from a close scrutiny of his paper. The likelihood of their being due mainly to suggestion is increased by the drawing of conclusions from the apparent effects of only one or two doses in each patient. It is remarkable that the reported improvement of parkinsonism was not increased by giving a larger dose of harmine and that the only enhanced effect was an increase in vertigo and nausea. If the amelioration of parkinsonism were a physical effect of harmine it would be expected to have been made more pronounced by increasing the dose. Rustige's findings differ considerably from those of Beringer, although it is now shown that they were using the same drug. Beringer reported no amelioration of the general bradykinesia and no psychical effect from the administration of banisterine. Lastly, it may be pointed out, though tentatively, for Gunn has observed that the actions of harmine vary in different animals, that the reported effects on parkinsonism are somewhat inconsistent with the effects upon laboratory animals. Rustige reports no production of involuntary movements, restlessness, or muscular contraction as immediate effects of the administration of harmine, but describes diminution of rigidity and increased freedom of movement as the first effects evident upon the musculature.

Conclusions.

1. The identity of the alkaloids banisterine and harmine appears conclusive.

2. Harmine in doses up to 0·04 g. given hypodermically has no perceptible objective or subjective effect in ameliorating any of the symptoms presented in the parkinsonian syndrome and is of no value in the treatment of this condition.

3. When given in the above doses harmine produces toxic symptoms of dizziness, headache, nausea, and vomiting in a certain proportion of cases.

4. These toxic symptoms are probably due to the action of harmine on the brain-stem—e.g., stimulation of the vestibular nuclei and vomiting centre.

5. In one reported case, and in one of our cases, the symptoms of severe chronic tachypnœa in a patient free from parkinsonism were partially relieved.

References.

Beringer, K.: Der Nervenarzt, 1928, i., 265.
Flury, F.: Arch. f. Exp. Path. u. Pharm., 1911, lxiv., 105.
Gunn, J. A.: Trans. Roy. Soc. Edin., 1909, xlvii., 245.
Same author: Ibid., 1911, xlviii., 83.
Gunn, and Marshall, D. G.: Proc. Roy. Soc. Edin., 1920, xl., 140.
Gunn: Ibid., 1929, i., 769.
Same author: THE LANCET, 1929, i., 1140.
Hamet, J.: Comp. rend de l'Acad. de Sci., 1927, clxxxiv., 1266.
THE LANCET, 1929, i., 537.
Lewin, L.: Arch. f. Exp. Path. u. Pharm., 1928, cxxix., 133.
Same author: Comp. rend. de l'Acad. de Sci., 1928, clxxxvi., 469.
Rustige, E.: Deut. Med. Woch., 1929, lv., 613.
Tappeiner, H.: Arch. f. Exp. Path. u. Pharm., 1895, xxxv., 69.

ACTINOTHERAPY.

SOME CLINICAL RESULTS OF TREATMENT.

BY ALBERT EIDINOW, M.B., B.S. LOND.

THE clinical results here described have been based upon records from over 300 cases under my personal care. Some had failed to progress by other methods of treatment, and all were selected, after careful clinical examination, as being likely to respond favourably to light. About 6000 applications of light have been given. Two methods of treatment were adopted: (1) the irradiation of the normal skin of the body—general treatment; (2) application of rays to the site of local lesions—local treatment.

The technique of general treatment has been based upon the principles of "short-ray therapy," which has already been fully described,[1 2 3] and can be summarised as: (1) exposure of an area of skin roughly equal to one-sixth of the surface area of the body; (2) an interval of 10–14 days between irradiations of any given area of skin; (3) irradiation conducted two to three times a week; (4) the application of the minimal erythema dose.

The table classifies the lamps which have been employed and the average dose of rays applied.

In the early cases the sensitiveness of the skin to ultra-violet rays was estimated by means of the "test dose armlet"; the result determined the minimal erythema dose for the type of lamp used for irradiation. In practice it was found that constant and biological dosage could be obtained by careful control of the ampèrage and voltage passing between the electrodes of a lamp. The sensitiveness of the white skin to short ultra-violet rays differs from its sensitiveness to long ultra-violet and visible rays. Thus

many cases of pathological photo-sensitisation show marked hypersusceptibility to exposure to visible rays, but normal reaction to short ultra-violet rays. Children are more resistant to light than adults. The types of skin which are very sensitive to ultra-violet rays are: (1) The "rheumatic or gouty" type, having a dry skin, sweating with difficulty, and a high nitrogen content of blood or urine. The extreme types are seen in some cases of uræmia and nephritis, which are very sensitive to light. In these types erythema is very irritable, painful, and often produces a papular or vesicular rash over the whole body. Improvement is obtained by a course of "sweat-producing baths" and alkaline medicines. (2) The skin over varicose veins of the legs. (3) The type showing vasomotor circulatory disturbances, such as chilblains. This is usually associated with a white, poorly pigmenting skin, sweating, and diminished capillary tone. Marked improvement is seen in these cases after preliminary irradiation.

Table showing Classification of Lamps.

Type of lamp.	Voltage between electrodes.		Ampèrage.		Kilowatt energy.	Time in minutes for minimal erythema for normal white skin.
	Min.	Max.	Min.	Max.		
Long-flame arc. Iron-cored carbons. 240 D.C.	55	85	25	32	1·375–2·720	3½–5
M.V.L. (atmospheric) 480 volts D.C.	200	250	2·5	5	0·5–1·25	1½–3½
M.V.L. (vacuum) 240 D.C.	105	135	2·0	5	0·21–0·675	2–5
Kromayer type water-cooled M.V.L.	105	180	2·0	7	0·21–1·26	½–2
Throat lamp.	60	120	0·6	2·0	0·036–0·240	2–4
Quartz mercury H.F.E.	—	—	300 ma.	500 ma.	—	3–5

D.C. = Direct current. M.V.L. = Mercury-vapour lamp.
H.F.E. = High-frequency electrodes. ma. = milliamèpres.

Hæmobactericidal Power.

The erythema reaction obtained by exposure of the normal skin to rays shorter than 3000 A.U. was correlated in 182 cases with an increase in the bactericidal power of the blood tested in vitro by the "slide cell technique," described by Wright, Colebrook, and Storer.[4] In each case the minimal erythema dose of rays was applied to an area measuring, roughly, 144 sq. in. Samples of defibrinated blood were collected before and two hours after irradiation. The hæmobactericidal power of each sample was determined. The following results were obtained:—

	Per cent.
Cases in which hæmobactericidal power increased after irradiation of skin	153 = 84·5
Cases in which hæmobactericidal power decreased after irradiation of skin	15 = 8·5
Cases in which hæmobactericidal power did not change after irradiation of skin	13 = 7·0

Prof. Greenwood has kindly investigated the results of these observations, and has determined the mean average bactericidal power of the cases treated before and after exposure to light. These results show that 84·5 per cent. of cases tested have increased bactericidal properties of the blood two hours after irradiation, and that the average increase is 6·5 per cent.

Experiments have been carried out[5] which suggest that a local bactericidal effect is produced at the site of irradiation, and carried later by the blood stream into the general circulation. In many cases the bactericidal property of human blood is high, and the increased bactericidal effect after radiation appears comparatively small. The fact that it is improved after irradiation can be accepted as an index of beneficial action. In some cases in which the bactericidal power was abnormally low a marked increase resulted after irradiation. Excessive dosage and over-exposure to light cause a fall in bactericidal power, and harmful results follow, as in chronic pulmonary tuberculosis. Although in laboratory experiments the hæmobactericidal power of animals has been increased by other physical agents, such as heat and mustard plasters, the application of these agents to the human skin is impossible, as the intensity of the burning or blistering necessary is too severe. While the bactericidal test of the blood is an index of the response of the human body to the erythema-producing rays shorter than 3000 A.U., it is no index of the effects of the infra-red, visible, and long ultra-violet rays. When the leucocytic function of the blood is impaired and hæmobactericidal power is low, as in some types of chronic tuberculous disease of the lungs and acute pyrexial microbic infection, dosage and treatment by short ultra-violet rays should be controlled by the study of the bactericidal power of the blood; this makes the method of treatment safe, as an increase in the power can be accepted as evidence of progress.

The series of cases which are described have all received individual treatment and supervision. General treatment was first applied by irradiation with mercury-vapour lamps; at a later stage when slight pigmentation was evident, exposure to two long-flame arc lamps was added to the treatment.

Debility.

Debility accounted for a large proportion of the cases treated. Many of the patients gave a history of previous acute illness—e.g., influenza, colds, and catarrh; in others there was evidence of susceptibility to colds. Although many had no signs of organic disease, the subjective symptoms—i.e., fatigue, weakness, and general malaise, generally demonstrating a subnormal state of health, were the chief reason for treatment. The average number of treatments per case was 13·3. So far as clinical results of treatment can be assessed by personal observations, the general tonic effect of radiation was evident in many patients. They usually said they felt brighter and more energetic, and often that their skins felt warm and glowing and able to withstand cold. Some patients, however, described a feeling of lassitude and drowsiness with an inclination to sleep. Since there are no definite physical signs obtainable to assess the results of treatment, personal subjective observations must be accepted. In cases of severe debility following acute illness the treatment appeared to hasten speedy recovery and return of vigour and health. A low hæmoglobin percentage was obtained in 18 cases, and all these showed an increase of hæmoglobin after 12 treatments. The average percentage before treatment was 66·2 and 82 after 13·9 treatments.

Skin Diseases.

Cases of eczema, acne, alopecia, and early psoriasis have shown the best results. A short course of general exposure by "short ray therapy technique," usually 4–6 treatments, was given before intensive treatment—i.e., a full erythema dose over the lesion every 10–12 days. The erythema persisted for four to five days, and desquamation of the skin occurred after six to eight days. When the skin lesions were diffusely scattered over the whole body, different areas were selected for intensive treatment once or twice a week, but treatment was never reapplied to any given area until all signs of desquamation had disappeared. Ichthyosis showed an excellent response, and cases of complete alopecia of many years' duration improved, four having almost completely recovered after 18 months' progressive treatment.

Tonsillitis and Sinusitis.

General exposure to light by "short ray therapy" improves the general body health and the anæmia

and debility which are associated with subacute inflammatory diseases. Catarrh is lessened and the œdema and congestion of tonsils and pharynx are diminished. Local treatment to the mucous membrane and tonsils is indicated in cases of chronic catarrhal inflammatory conditions with recurrent acute attacks. The treatment has proved beneficial in lessening the susceptibility to colds and acute bronchitis. Treatment is indicated: (1) as a general tonic following the debility and toxæmia associated with septic throats; (2) to improve the general health before tonsillectomy or drainage of maxillary antrum; (3) to heal septic tonsils and discharging sinuses; (4) to diminish the frequency of colds and bronchitis. Local treatment of the pharynx, tonsils, and mucous membrane by the water-cooled throat lamp should only be applied in chronic conditions; in active acute inflammatory conditions it may give rise to a spreading acute cellulitis.

Asthma and Bronchitis.

General treatment has been beneficial and has hastened the healing of cases of active bronchitis. Some cases of bronchial asthma have reported definite improvement. The treatment is of great help during the cold, wet winter months, and assists many patients with chronic emphysema and bronchitis to carry on with their routine work. Cases of debility and bronchitis in young children have responded well.

Lumbago, Arthritis, and Chilblains.

A full erythema reaction over the dorsal lumbar region has in some cases greatly benefited cases of lumbago. Beneficial results have only been obtained in early cases of arthritis. The condition of fibrosis and thickening of synovial membranes with effusion have not shown improvement. The exposure of the hands or feet to intensive radiation has completely cured chilblains by improving the capillary circulation. The continuation of the treatment lessened the incidence of recurrence during the cold weather.

Tuberculous Diseases.

Lupus Vulgaris.—Early cases of lupus vulgaris are healed by general irradiation of the skin. All cases were given general irradiation in addition to periodic local treatment at the site of lesions. Chronic cases in which there was much fibrosis, scarring, and hypertrophy of granulation tissue proved most resistant. Before local treatment, the skin was carefully prepared and cleaned so as to remove dead cells, scales, and scabs. The application of a diathermy needle to isolated fibrous nodules was helpful. In one chronic case a "light sensitisor" (eosin) was injected locally; this caused intense reaction and a slow-healing ulcer. The result was favourable, and the method appears to be indicated in the most resistant types of lupus. If the treatment was continued long enough, in some cases for many months, all cases of lupus completely healed.

Glands.—All cases were treated by general irradiation; local treatment was only applied to discharging sinuses and soft caseous glands. Careful dosage of local irradiation at first caused swelling of the glands, followed by softening and increased discharge, and finally by healing. This inflammatory reaction and increase in size was often seen in the early stages of general treatment, but none of the glands broke down and suppurated. Periadenitis was lessened, and the glands became smaller in size, discretely isolated, and freely mobile. Fibrosis and healing of glands was obtained in all the cases selected, together with marked improvement in the general health with increase of weight, appetite, and general appearance.

Lungs.—The cases selected were chronic, "organised," non-pyrexial types of tuberculous disease. During the early stages of treatment expectoration was increased, and rest in bed after treatment was prescribed if there were symptoms of fatigue or malaise. The patients have improved and have kept well during the past year.

Larynx and Palate.—Tuberculous disease of the palate, tonsils, pharynx, and larynx respond to irradiation favourably. Local treatment is indicated in all cases in which there is no serious lesion of the lungs. Early cases heal with great rapidity. General irradiation of the skin two to three times a week and local treatment of the lesions was applied every 10 to 12 days. Patients were rested for 24 hours after local treatment, as a general reaction sometimes occurred. The technique of treatment with the special throat lamp has already been fully described.[6] The results are very satisfactory, and so far all cases have healed completely, except one case in which there was disseminated tuberculosis of the lungs. Tuberculous disease of the mucous membrane heals with greater rapidity than tuberculous disease of the skin.

Acute Pyrexial Microbic Infections and Granulating Wounds.

Small areas of skin, equivalent to one-twelfth of the surface area of the body—i.e., front of one leg—were exposed daily to a mercury-vapour lamp, and the minimal erythema dose was controlled by tests of the bactericial power of the blood. In all cases tested the initial bactericidal power of the blood was high, and an increase was observed after irradiation. If the hæmobactericidal power had decreased after irradiation treatment would have been discontinued. Lassitude, drowsiness, and sleeping were common after treatment, and in some cases a slight rise in temperature was attributed to the irradiation. Treatment was not applied when the temperature was high. More clinical evidence is necessary before definite conclusions can be recorded.

The improvement of general health by general treatment and local irradiation hastened the repair of granulation tissue and discharging sinuses after surgical operation. The most favourable results were obtained in the treatment of granulating wounds after radical mastoid operations.

Conclusions.

Light ray therapy is a painless method of treatment, which can be carefully controlled during the whole period of illness by cautious technique and correct dosage. Compared to other methods of treatment, such as radical surgical operation, scraping, or curettage, painting with strong acids, caustics and cauterisation, successful results of treatment of some tuberculous diseases by radiation therapy are a wonderful triumph. The treatment needs no anæsthesia, and causes little pain, and patients can often safely continue their normal routine during treatment. The scar tissue which follows healing of ulcers and granulation tissue is soft and freely mobile, and has a characteristic "white tissue-paper" like structure; telangiectic and keloid scars are unknown. The rapid healing of extensive tuberculous and other pyogenic chronic ulceration of the palate and fauces by means of this therapy decisively proves its curative power.

References.

1. Eidinow, A.: THE LANCET, 1925, i., 317.
2. Hill, L., and Eidinow, A.: The Practitioner, August, 1925.
3. Eidinow, A.: THE LANCET, 1926, ii., 645.
4. Wright, A. E., Colebrook, L., and Storer, E. J.: THE LANCET, 1923, i., 365, 417, 473.
5. Eidinow, A.: THE LANCET, 1927, ii., 963.
6. Proc. Roy. Soc. Med., 1929, xxii., No. 4, 523.

HOSPITALS AND ROAD ACCIDENTS.—The Ministry of Health and the Royal Commission on Transport have informed Mr. W. Renshaw, of the Altrincham Provident Dispensary and Hospital, that the position of hospitals in regard to the treatment of cases arising from road accidents "shall be taken into consideration." Mr. Renshaw is asking hospital secretaries all over the country to inform him of the number of such cases treated in 1928, their cost, and the payments made by the patients concerned.

THE IMPORTANCE OF THE LIVER IN CHEMOTHERAPY.*

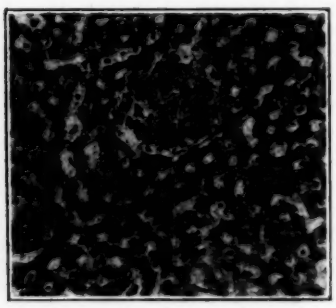
WITH SPECIAL REFERENCE TO THE TREATMENT OF MALIGNANT DISEASE.

By L. CUNNINGHAM, M.B. Camb., M.R.C.P. Lond.,
HONORARY ASSISTANT PHYSICIAN, DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL;
AND
M. M. DATNOW, M.D. Liverp.,
CONSULTING GYNÆCOLOGIST, CLATTERBRIDGE INFIRMARY; CLINICAL ASSISTANT TO THE GYNÆCOLOGICAL DEPARTMENT, ROYAL INFIRMARY, LIVERPOOL.

When we come to consider the variety of its functions it is evidently no mere accident or caprice of Nature that the liver is the largest organ of the body. Its portal circulation brings it into intimate relationship with the gastro-intestinal canal and spleen, so any blood changes occurring in these organs must act with particular intensity on the liver. The fact that all the material that enters the blood from the stomach, the small intestines, and the proximal part of the large intestine must pass through the liver before it enters the general circulation, helps to protect the body from toxic substances that may be absorbed from the intestinal canal. Some are converted directly into atoxic material, as when ammonium salts are converted into urea. Others combine with glycocoll, sulphuric acid, or glycuronic acid, and are thereby deprived of poisonous properties. Lastly, alkaloidal and mineral poisons are, to a certain extent, removed from the blood during their passage through the liver, and, as Willcox[1] states, as many others have done, this organ must be regarded as the first line of defence in all cases of generalised poisoning. The importance of the part played by the liver in carbohydrate metabolism, in the contribution of fibrinogen to the blood, in anaphylactic shock, in the secretion of bile, and the absorption of water is well established.

The toxic effect of arsenic on the liver has been the source of great concern to those employing the substance therapeutically. Foulerton[2] was among the first to call attention to the possible harmful effects of the arsenical compounds as essentially identical with poisoning by chloroform, ether, trinitrotoluene, and phosphorus. He experimented with rabbits and found an interstitial hepatitis with injury to the parenchyma cells and, in addition, nephritis. Clinically the toxic effects on the liver tissues and kidney may now be regarded as being among the most common of the ill-effects following the administration of this drug.

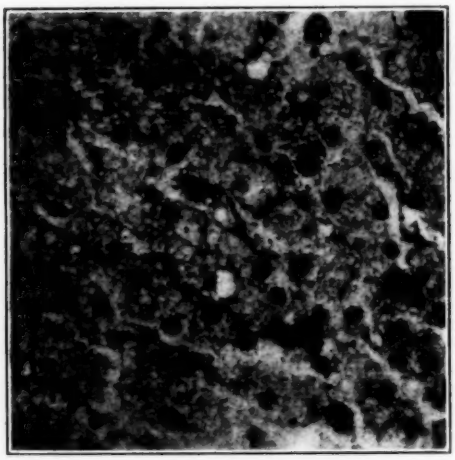
Fig. 1.



Liver from a rat treated with colloidal lead showing focal necrosis. (Microphotograph × 110. Prof. Carter Wood.)

MacCormac and Dodds[3] investigated the liver function of 57 patients in different stages of disease undergoing treatment with novarsenobenzol. In 52 of these the liver function was normal, and in the remainder, as they are careful to point out, any liver damage need not necessarily be due to the arsenic which is used, but may be caused by the syphilis which is being treated. There appears to be abundant evidence that every degree of jaundice and even acute yellow atrophy may occur in syphilis as an accident of this disease, and perhaps, therefore, is in no way connected with the use of an arsenical preparation. On the other hand, arsenic when administered to patients for other conditions than syphilis has been known to cause definite derangement of hepatic function.

Fig. 2.



Liver from a cat treated with colloidal lead showing particles of the metal in the Kupffer cells. (Microphotograph × 500. Prof. W. J. Dilling.)

General anasarca following the ingestion of arsenic was recorded by Bang[4] as long ago as 1774. Geyer[5] reported the occurrence of wholesale poisoning from arsenic at Reichenstein, and mentions the frequent occurrence of serous effusion and ascites. Broadbent[6] made the interesting observation that the serous effusions occasionally seen in Hodgkin's disease might be attributable to the arsenic commonly employed in the treatment of this disorder. Rolleston[7] states that arsenic seems to be capable of setting up cirrhosis of the liver, mentioning in particular the Manchester epidemic in support of this view. O'Leary[8] reported undoubted examples of portal cirrhosis occurring in cases of chronic arsenical poisoning following the therapeutical use of potassium arsenite.

There is little doubt that many of the toxic effects of lead administered intravenously are in part due to liver damage. The varieties of pathological changes produced, especially in the experimental stages of the treatment of malignant disease with lead, have already formed an interesting study.*

When we consider the importance of the liver as an eliminator of lead it is not surprising that in industrial poisoning the rôle played by this metal in the production of hepatic lesions assumes considerable proportions. Several types of lesions of precirrhotic or cirrhotic character have been described. Potain[10] reports the occurrence of atrophy of the liver cells, fatty degeneration or infiltration, and intercellular or interlobar cirrhosis, and other observers add that small areas of exudation and hæmorrhage may also be seen.

Kussmaul and Maier[11] believe that lead acts directly on the portal vessels, but Hanot and Charpentier[12] think that the hepatic cells themselves are chiefly affected. Meillère[13] states that periportal cirrhosis may be produced experimentally by lead, but Ophuls,[14] who worked with guinea-pigs, failed to observe this lesion.

* This investigation was undertaken on behalf of the Liverpool Medical Research Organisation. Director: Prof. W. Blair Bell, University of Liverpool.

Seeligmüller [15] found evidence of hepatic cirrhosis in the liver of a new-born child of a lead worker, and recovered lead from the organ.

In spite of all the pathological conditions which have been noted in plumbism the consensus of opinion among pathologists who have studied lead poisoning is that post-mortem examination of the liver reveals no changes specific for lead. We ourselves have produced focal necrosis in the liver of rabbits that have received intravenous injections of lead, but no cirrhotic changes have been observed. Carter Wood [16] has demonstrated focal necrosis in the liver of rats by similar means (Fig. 1). Prof. Dilling [17] has shown that shortly after intravenous injections of colloidal lead the liver contains a considerable part of the metal which is distributed throughout the body. This observation is supported by those of other investigators. It must, however, be remembered that the route, frequency, and size of the dosage, and the time elapsing subsequently before the death of the animal, influence the final distribution of lead in the tissues. Dilling both estimated his lead quantitatively and demonstrated it microscopically. He found that the Kupffer cells appeared to contain large quantities of the metal (Fig. 2). This illustration shows the appearances of the Kupffer cells in the liver of a cat after intravenous injections.

FIG. 3.

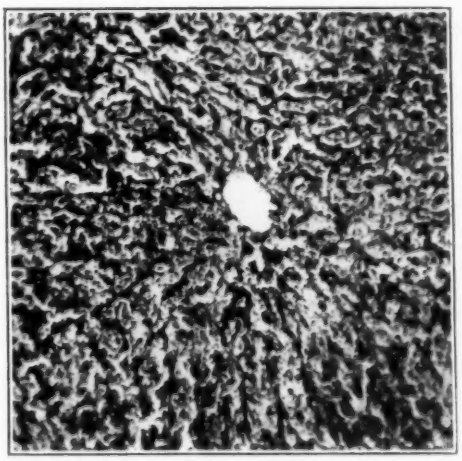
Liver from a rabbit treated with colloidal lead malate showing hæmorrhages into the liver substance. (Microphotograph × 110.)

The toxic effects of lead on the liver apparently arrange themselves into two groups: first, there is the general toxic or massive dose effect, similar to that which any toxin would produce if introduced into the blood stream, and which has been repeatedly demonstrated by many investigators. This can be produced by lethal doses of any lead preparation and is well illustrated in Fig. 3, which is a microphotograph of the liver of a rabbit treated with a large dose (50 mg.) of colloidal lead malate. Secondly, there is the delayed lead effect which can be produced by most preparations of lead if the dosage be controlled (Fig. 4). There is dilatation of the capillaries compressing the parenchyma cells, a condition which is general throughout the whole liver and is brought about by doses of lead preparations slightly larger than the amount required to produce abortion in pregnant does (a method of which use has been made in regulating the therapeutic doses of the various lead colloids prepared for the Liverpool Medical Research Organisation). If now more lead be given to the animal hæmorrhage will occur and the appearance will be similar to that in Fig. 3 described above. This is probably the explanation of the hæmorrhage mentioned by Legge and Goadby [18] in the livers from cases of lead poisoning.

With smaller doses, as employed in the treatment of patients, cloudy swelling results but rapidly clears up, and the liver is probably normal again in 24 hours. Substances like colloidal lead selenide, colloidal lead phosphate, and colloidal lead hippurate can be administered to rabbits in large doses (30 mg. per kg. of body-weight) without producing any effect other than cloudy swelling commencing around the central vein, the parenchyma cells in the neighbourhood of the portal systems being involved to a lesser extent or not at all. We suggest that if the lead had been administered by the mouth the portal areas might have been the first to degenerate, and would like to point out that in discussing the effect of lead on an organ like the liver, to which the blood arrives from distinct sources, it is essential always to bear in mind the portal of entry. This is so often overlooked by writers on the pathology of industrial lead poisoning and may perhaps be the explanation of the variety of changes described by different investigators. The period over which the lead has acted and the time when the post-mortem was performed should always be stated in drawing conclusions from particular histological appearances. The cloudy swelling may, of course, proceed to actual necrosis of the cells.

The fact that cirrhosis of the liver of the animals was not found is probably due to the fact that insufficient time had been allowed to elapse between the time of injection and that when the animal was killed. It seems quite probable that it would occur in the healing process after degeneration of the cells, but would not arise with the quantities employed during a course of treatment for malignant disease. In the livers examined histologically particles similar to those described by Dilling were constantly found in the liver cells.

FIG. 4.



Liver from a rabbit treated with colloidal lead aspartate showing the congested and dilated capillaries compressing the liver cells. (Microphotograph × 140.)

Clinical Manifestations.

Just as in the case of arsenic the obvious clinical manifestation of liver involvement in the course of treatment of malignant disease with lead, following the technique of Blair Bell,[19] is jaundice. With the increase of experience with regard to dosage and the interval between each dose we now see very little of this symptom, and it rarely attains any severity. It is very probable that a good many other symptoms,

such as nausea and vomiting may be in part due to liver involvement. Table I., compiled from a series of 216 recent consecutive cases, illustrates the frequency of jaundice during treatment and the extent to which it is dependent on the nature of the preparation used.

TABLE I.

—	Number of consecutive cases observed.	Number developing jaundice.	Percentage developing jaundice.
S_7. Lead suspension (Pb = 0·5 per cent.)	172	19	11
L.S. Lead selenide (Pb = 0·2 per cent.)	19	2	10
H_{95}. Lead phosphate (Pb = 0·4 per cent.)	25	0	0

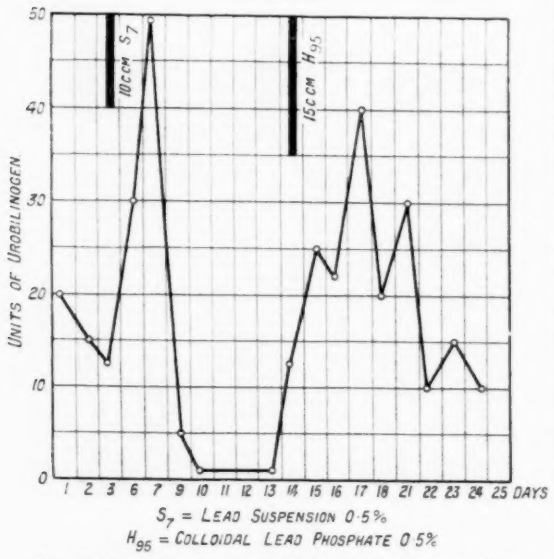
Tanquerel des Planches [20] in 1839 drew attention to two kinds of jaundice occurring in lead poisoning. He distinguishes "jaunisse suite des doleurs de colique" from "l'ictère saturnine, résultat de l'altération du sang par le plomb." The former he states to be due to extravasation of bile from its usual reservoir, and the other to a direct change of the blood by lead. This observation was amazingly accurate, and with our present knowledge of the reticulo-endothelial system is easy to explain.

In the early days of experimental lead therapy when larger doses were used three distinct types of jaundice presented themselves.

(1) A pure hæmolytic jaundice due to destruction of red blood-cells by lead and characterised by a fine icteric tinge, an indirect van den Bergh reaction, and excess of urobilinogen, but with no bile pigments in the urine.

(2) A type in which jaundice was deeper and in which a variety of van den Bergh reactions, including the biphasic,

FIG. 5.



The effect of intravenous colloidal lead phosphate on the output of urobilinogen.

were obtained and along with which were found excess of urobilinogen and bile pigments in the urine. This type must have been associated with definite damage to the liver parenchyma.

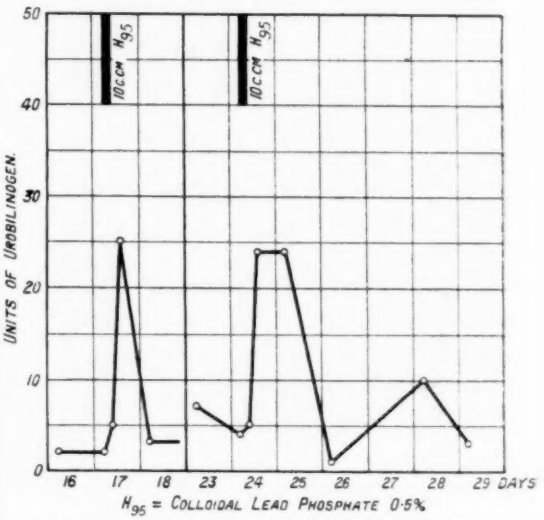
(3) A frankly obstructive jaundice where in addition to the changes in type (2) there must have been a cholangitis leading to obstruction of the smaller bile-ducts. In this type the jaundice is deep, bile pigments are present in the urine in large quantities, and the van den Bergh reaction is of the immediate direct type.

The majority of cases developing jaundice was apparently of the hæmolytic type and transient in nature, but the following case illustrates the rapid production of obstructive jaundice following a massive dose of lead suspension.

CASE N. H. 17.—Male, aged 24. Diagnosis, radiographic and histological, sarcoma of the femur.

Initial investigation revealed absence of anæmia and normal renal function. A massive dose of lead suspension

FIG. 6.



The effect of intravenous colloidal lead phosphate on the output of urobilinogen.

(40 c.cm. of 0·5 per cent.) was administered intravenously at midday on Dec. 18th, 1924. The patient had a rigor lasting ten minutes at 6.30 P.M. and vomited three times. There was no diarrhœa. The following day there was marked diminution in the secretion of urine; hæmaturia, jaundice, and vomiting continued. On Dec. 22nd there was still oligurea, only 64 c.cm. of urine being secreted in 24 hours. The jaundice was deeper, there was bile in the urine, and the serum gave a positive direct van den Bergh reaction. By this time the blood-urea had risen from 23 mg. to 167 mg. per 100 c.cm. and the hæmoglobin had dropped from 98 per cent. before treatment to 38 per cent. after. On the following day the jaundice was less deep but persisted in some degree until the patient's death on Jan. 1st, 1925.

Output of Urobilinogen.

The consensus of opinion is that bacteria in the intestine convert bilirubin into urobilinogen. Most of this is excreted by the gut, but some is carried to the liver by the portal system and so reaches the liver parenchyma. The absorbed portion is largely reconverted by means of the liver cells and re-excreted with the bile; a small portion remains unchanged and is excreted in the urine. This conversion by the liver of most of the urobilinogen into bilirubin is important, in that many observers regard excess of urobilinogen in the urine as evidence of a damaged liver which is unable to bring about the conversion. MacCormac and Dodds [3] conclude that if there be any damage to the liver cells this property of converting urobilinogen into bile pigment is lost and, therefore, urobilinogen accumulates in the blood and is excreted in excess in the urine.

Uvedale Owen [21] has drawn attention to a fact which had escaped the attention of some observers—namely, that the output of urobilinogen varies from hour to hour and from day to day in the same individual. We have been able to confirm this observation and further to note that such factors as ketosis and intestinal stasis tend to increase the output of urobilinogen in the urine. Bearing these limitations in mind we have found the output of urobilinogen in the urine to be a valuable guide to the probable extent of liver damage, the result of lead therapy,

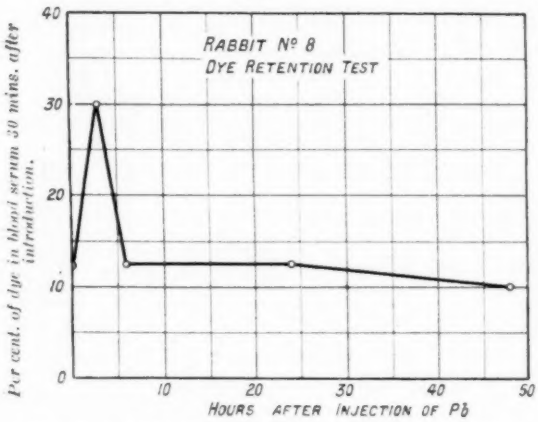
Indeed, we have considered a high urobilinogen content of the urine as the result of lead therapy to be a contra-indication to further dosage until more normal values have been obtained.

The quantitative test we have used is a modification of that of Wallace and Diamond [22] who used Ehrlich's aldehyde reagent which produces a red colour with urobilinogen. The effect of lead therapy on the output of urobilinogen is shown in the following two charts of patients who are undergoing treatment (Figs. 5 and 6). Each morning the amount of urobilinogen in the urine is estimated and in some cases each specimen that is passed for 24 hours or 18 hours as in Fig. 6. The immediate rise corresponds closely with the period of maximum dye retention in rabbits following injections of lead which will be described later. Occasionally no rise in the urobilinogen output occurs, and it is these cases which show but little tendency to develop toxic manifestations.

Dye Retention.

The dye-retention test was devised by Rowntree, Hurwitz, and Bloomfield,[23] who noted that phenoltetrachlorphthalein, when injected subcutaneously, escaped from the body exclusively via the biliary passages. By careful animal experiments the originators of this test were able to prove that the excretion of the drug diminished in proportion to the amount of liver tissue damage. Since this work various improvements have been suggested both in the method of administration, nature, and dose of the dye. Graham and Cole [24] inject 40 mg. of phenoltetraiodophthalein per kg. of body-weight intravenously, thereby taxing the liver to its utmost with a relatively toxic but brilliant dye, estimating the amount of dye left in the blood after half an hour. They have found that by using this amount it is possible

FIG. 7.



The effect of intravenous lead suspension on dye retention in a rabbit.

to estimate smaller variations in extent of liver damage than can be found by using the lesser quantities of phenoltetrachlorphthalein and bromsulphthalein.

In our experiments we have used both the bromsulphthalein as recommended by Bulmer[25] and more recently phenoltetraiodophthalein, adopting the method of Graham and Cole and following their technique in every detail. Our experiments were divided into two groups: in one group the dye retention in rabbits following lead (S_7) injections was determined, and in the other group the effect of lead on the dye retention was estimated in patients undergoing treatment with this drug.

Table II. and Fig. 7 illustrate the effect of lead in the form of S_7 which is a suspension containing 0·5 per cent. of lead, on the dye retention of rabbits.

It will be noticed that the highest rise occurs about three hours after the injection, but that a rise is frequently observed also on the day following injection and that this tends to return to normal after two or three days. In the case of patients undergoing treatment with lead—that is, with relatively smaller doses than were given to the rabbits—no difference was observed in the dye retention either in the case of bromsulphthalein or phenoltetraiodophthalein.

TABLE II.

Date.	Rabbit.	Amount of Pb.	Dye per cent. after half-hour.	Time after Pb.
24/2/29	No. 7,* Chinchilla, 2750 g.	—	10	Before Pb.
25/2/29	—	10 c.cm. S_7	25	3 hours
25/2/29	—	—	10	6 ,,
26/2/29	—	—	20	24 ,,
24/2/29	No. 8, English, 2250 g.	—	12·5	Before Pb.
25/2/29	—	10 c.cm. S_7	39	3 hours
25/2/29	—	—	15	6 ,,
26/2/29	—	—	12·5	24 ,,
27/2/29	—	—	10	48 ,,
7/3/29	—	—	5	10 days
8/3/29	—	5 c.cm. S_7	35	4 hours
15/3/29	—	—	10	7 days
20/11/28	No. 5, 2350 g.	—	3	Before Pb.
21/11/28	—	10 c.cm. S_7	—	—
22/11/28	—	—	10	24 hours
23/11/28	—	—	3	48 ,,
28/11/28	—	—	4	7 days
28/11/28	—	10 c.cm. S_7	—	—
29/11/28	—	—	12·5	24 hours
30/11/28	—	—	3	48 ,,
20/11/28	No. 6, 2000 g.	—	0	Before Pb.
21/11/28	—	10 c.cm. S_7	4	24 hours
28/11/28	—	—	2·5	7 days
28/11/28	—	10 c.cm. S_7	—	—
29/11/28	—	—	10	24 hours

* No positive van den Bergh reactions were ever obtained. This rabbit was very ill 24 hours after the lead administration and had to be killed. Histological examination of the liver showed definite liver damage. This will account for the increased dye retention when the test was carried out before the animal was killed.

Lævulose Tolerance.

The lævulose tolerance test as described by Spence and Brett [26] has been of no value to us in determining the extent of liver damage the result of lead therapy. It has, however, been useful in determining the suitability of cases for treatment with this drug in the initial investigation of the patient. One of the causes of its failure is the fact that nausea and vomiting, which the ingestion of large quantities of lævulose may produce, militate against the success of this procedure and these are of necessity a frequent accompaniment of a damaged liver.

Conclusions.

The conclusion we have come to in the observation of the toxic effects of the injection of colloidal lead is that a careful study of the existing damage to the liver in the course of treatment, so far as this is possible, is of importance in the determination of the extent and interval of dosage. A careful examination of the liver function is of great importance also in the initial selection of cases, for we cannot hope to treat a case successfully with lead where the liver function is even moderately impaired.

References.

1. Willcox, W. H.: Brit. Med. Jour., 1919, i., 605.
2. Foulerton, A. G. R.: Ibid., 1920, i., 864.
3. MacCormac, H., and Dodds, E. C.: Ibid., 1923, ii., 1200.
4. Bang, F. L.: Soc. Med. Harv. Collect., 1774, i., 307.
5. Geyer, L.: Arch. f. Derm. u. Syph., 1898, xliii., 221.
6. Broadbent, W.: Brit. Med. Jour., 1903, i., 1140.

(*Continued at foot of next page.*)

CONGENITAL ECTODERMAL DEFECT.

By A. W. FALCONER, C.B.E., D.S.O., M.D., M.R.C.P. Lond.,
PROFESSOR OF MEDICINE, UNIVERSITY OF CAPE TOWN, SOUTH AFRICA.

In 1920 Goeckerman [1] reported a case of a patient who presented more or less aplasia of most of the cutaneous ectoderm. He discussed six similar cases in the literature and considered they formed a distinct and easily recognisable type. He applied to them the term high grade or major ectodermal defect.

MacKee and Andrews [2] described a similar case. After a consideration of the literature they came to the conclusion that various grades of congenital aplasia of the skin, nails, hair, and teeth, and even of the subcutaneous and sweat glands, alone or in combination, are of fairly frequent occurrence, but that it is much more uncommon to meet with patients presenting congenital anomalies, ranging from deformation to complete absence of all the cutaneous structures originating from the epidermis. Goeckerman, in the discussion on this paper, referred to a further case seen by him, and stated that Jhadani, of India, had seen many of these cases as a hereditary, generally sex-linked, anomaly transmitted through the mother. Goeckerman's own case was in a female though all the other recorded cases were in males.

MacKay and Davidson [3] record a family, which they include under this group, showing a minor degree of ectodermal defect without involvement of the teeth, sweat or sebaceous glands. In this family the condition had shown itself in five generations and occurred in both males and females. As is usual with hereditary conditions in several of the cases no history of a familial incidence could be obtained. Jean Smith, [4] under the term abnormal dentition, showed a case in a male child of 5 years of age, markedly under weight, with dental aplasia, hypotrichosis, absence of sweating, and a history of a previous admission to hospital when 3 months of age with a temperature of 107·8° F. which rapidly fell and for which no cause could be detected, which apparently belongs to this group.

[1] Arch. Dermat. and Syph., 1920, i., 396.
[2] Ibid., 1924, x. 673.
[3] Brit. Jour. Dermat. and Syph., 1929, xli., 4.
[4] Proc. Roy. Soc. Med., 1929, xxii., 648.

DRS. CUNNINGHAM AND DATNOW: REFERENCES.

(*Continued from previous page.*)

7. Rolleston, H. D.: Diseases of the Liver, Gall-bladder, and Bile-ducts, London, 1914, p. 184.
8. O'Leary, P. A., et al.,: Jour. Amer. Med. Assoc., 1928, xc., 23.
9. Bell, W. Blair, Williams, W. R., and Cunningham, L.: THE LANCET, 1925, ii., 793.
10. Potain: Quoted by Meillère, G.: Le Saturnisme, Paris, 1903, p. 176.
11. Kussmaul, A., and Maier, R.: Deut. Arch. f. Klin. Med., 1872, ix., 283.
12. Hanot and Charpentier: Quoted by Meillère: Le Saturnisme, Paris, 1903, p. 177.
13. Meillère, G.: Compt. rend. Soc. de biol., 1902, liv., 1134.
14. Ophuls, W.: Amer. Jour. Med. Sci., 1915, cl., 518.
15. Seeligmüller, A.: Deut. Med. Woch., 1902, xxviii., 317.
16. Wood, F. Carter: Jour. Amer. Med. Assoc., 1926, lxxxvii., 717.
17. Dilling, W. J.: Jour. Path. and Bact., 1929, xxxii. (*In the press*)
18. Legge, T. M., and Goadby, K. W.: Lead Poisoning and Absorption, London, 1912.
19. Bell, W. Blair, Woolfenden, H. F., Williams, W. R., Cunningham, L., and Herd, S. B.: THE LANCET, 1926, i., 537.
20. Tanquerel des Planches, L.: Traité des maladies de plomb ou saturnines, Paris, 1839.
21. Owen, D U.: Ann. Trop. Med. and Parasit., 1928, xxii., 469.
22. Wallace, G. B., and Diamond, J. S.: Arch. Int. Med., 1925, xxxv., 698.
23. Rowntree, L. G., Hurwitz, S. H., and Bloomfield, A. L.: Johns Hopkins Hosp. Bull., 1913, xxiv., 327.
24. Graham, E. A., et al.: Jour. Amer. Med. Assoc., 1926, lxxxvi., 467.
25. Bulmer, E.: Quart. Jour. Med., 1927, xxv., 101.
26. Spence, J. C., and Brett, P. C.: THE LANCET, 1921, ii., 1362.

The main clinical characters described by MacKee and Andrews are as follows:—

1. A dry, white, smooth, thin, pliable, and glossy skin. In their own case there were numerous fine wrinkles at the corners of the eyes and on the cheeks near the nose.

2. Absence of sweat glands. None of the recorded cases had ever shown sensible perspiration, and histological examination which had been carried out in the majority of the cases failed to show sweat glands or anlage.

3. Dental aplasia to a pronounced degree was found in all the recorded cases. The case described by MacKee and Andrews had five teeth, the largest number recorded, including one in the lower jaw which is unusual as in all the other cases the lower teeth were absent.

4. Hypotrichosis. Congenital hypotrichosis is common to all the cases, the hairy parts being involved in various degrees. Tanugo hair is absent from most of the body surface.

5. The lips are thick, muscular, and everted, presumably the result of the additional labial activity required for mastication without teeth.

6. Depressed nasal bridge and chronic atrophic rhinitis. A depressed nasal bridge and prominent frontal bosses were present in all the recorded cases. In the great majority there was a chronic atrophic rhinitis.

The case described below is peculiar in that the bridge of the nose is not depressed.

7. In several cases the nails were deformed.

8. Papular lesions of the face are recorded in a considerable proportion of the cases.

9. Inferior mentality has been recorded in several of the cases, in others the mentality has been normal or somewhat above normal.

10. Patients are handicapped through inability to radiate sufficient heat under certain environmental conditions, but they are healthy and active and longevity is apparently unaffected.

In Tendlan's case [5] the mammæ were absent.

Subjective Symptoms.—The main subjective complaint which is common to all patients is discomfort in hot weather. They find it necessary to avoid heat, vigorous physical exercise, hot food and drink, especially in hot weather, and often are compelled to resort to artificial perspiration by keeping their clothes wet with water.

A New Case.

The following case was admitted to hospital under my care in July, 1924, and has been under intermittent observation ever since:—

V. J., male, aged 6½ years. Complaint: absence of teeth, hair, and sweating, with great discomfort during the hot weather.

Patient was born at full time after a difficult labour. He weighed 5½ lb. at birth. During the pregnancy the mother vomited incessantly but her general health did not seem to suffer much. He was breast fed for two months, but as he was extremely thin he was put on lactogen and later other foods. Nothing seemed to disagree with him but he remained extremely thin. At 9 months of age he developed a cough accompanied by hoarseness, and ever since then he has had periodic attacks of hoarseness. Up to 18 months of age he had no hair on his head or body, but at 18 months he began to show some downy hair on his head and a little on his body. He began to walk and talk at 18 months and at 2 years he cut two teeth in the upper gum, one on each side for back. An X ray taken at this time was said to have shown no evidence of further teeth. He had had various forms of ductless gland treatment, chiefly thyroid, but his mother always stopped them as they caused mental excitement. He was born and lived in Zululand, and ever since birth he had been very uncomfortable in hot weather and had never been seen to sweat. He managed to get through the hot weather by the use of frequent cold baths and keeping his hands and feet in cold water. Apart from the discomfort during the hot weather and the periodic attacks of hoarseness he had been well.

Family History.—There are two other children—4 and 6 years older than the patient. There have been no miscarriages. They are both perfectly well-developed and normal children. The mother is a well-developed woman. The father is rather small and thin. Recently (1929) he is reported to have developed tabes dorsalis. There is no known similar case on either side of the family.

On admission to hospital (June 9th, 1924) the boy's appearance (Fig. 1) simulated very closely a

[5] Virchow's Arch. f. path. Anat., 1902, clxvii., 465.

diminutive old man. He had a large globular head very scantily covered with an almost colourless down from 1 to 1½ inches long. There were numerous prominent veins all over his head. There was a complete absence of eyebrows; the eyelashes were present in moderate amount, but as they were almost colourless, they were not seen at first glance. Over the upper part of the face were a few scattered cream-coloured papules, the largest about the size of a large pin. Running horizontally backward from the outer canthus were numerous fine wrinkles, and similar wrinkles were present from the inner

FIG. 1. FIG. 2.

Patient, aged 6½ years. Aged 7¼ years.

canthus running down the cheek and at the angles of the mouth. The nose was straight and not depressed. The lips were relatively thick and everted. The lower jaw was very poorly developed. The alveolar margin was thin and sharp, not much thicker than the blade of a knife. There were two teeth, one on each side of the upper jaw for back. An X ray shows no evidence of further teeth.

The whole lower half of the face was tiny compared with the upper half. The body was extremely thin; there was a complete absence of breasts and the nipples were represented only by a minute pigmented spot. The whole skin was dry but not harsh except on the palms of the hands, where the skin was thick, cracked, hard, and dirty. There was on the limbs a very scanty, very fine down-like hair. The genitals are underdeveloped, the testicles being about the size of small cherry stones.

Radiological Appearances.—X ray of the skull showed a normal sella turcica. The bones of the vault of the skull were very thin. X ray of the limbs showed ossification normal for his years. There was no cardiac enlargement.

The blood pressure was 100/62. The urine showed no albumin or other abnormal constituents. There was a distinct polyuria varying from 50–80 oz. per day. The urea-concentration test at the second hour showed 2·45 per cent. The two-hour test showed a variation of 16 in the specific gravity and no increase of nocturnal urine. The blood-urea was 30 mg. per 100 c.cm., creatine 1·75 mg., uric acid 2·3. A blood-sugar curve was normal. The basal metabolic rate was on first admission estimated at +15 per cent., a year later at −6 per cent.

Dr. J. Luckhoff, in charge of the nose and throat department, reported:—

"The upper jaw though with an ill-developed alveolar margin is shallow but very broad, consequently the nasal spaces are quite abnormally wide, the turbinate bodies are relatively small, and the mucous membrane dry with a secretion of yellow tenaceous muco-pus—a pathological condition clinically (though not typical) very similar to the disease we term atrophic rhinitis. Relative to the size of his nasal spaces his maxillary sinuses are not large, his frontal sinuses are very small. Larynx shows a typical laryngitis sicca secondary to the nose condition. Mastoid processes both in surface bulge and in length are abnormally developed with a deep sulcus between them and the meatus on each side. The skull bones seem thin."

The Wassermann reaction was negative. Mentally the boy was bright and, possibly because he had never been to school on account of his peculiar appearance, precocious. In 1929 his appearance had improved and he is now attending school and doing quite well. His mother states that he has already had several articles or children's stories published in the newspapers.

Pilocarpine up to one-sixth of a grain, followed by a hot pack, produced no visible perspiration.

Readmission.—The patient was readmitted again for examination in April, 1925. His appearance had distinctly improved and he looked decidedly younger (Fig. 2). There was an increased growth of hair on the head and there was definite evidence of eyebrows. He was still very uncomfortable in hot weather, but thinks he sweats a little now. After pilocarpine, gr. ¼, although no visible sweat was apparent, on palpation there did appear to be some moisture on the skin. The physical examination was as on previous examination except that the knee-joints were rather more prominent. There was no pain but there seemed to be slight effusion in both joints. The testicles did not appear to have developed much.

There was much difficulty in getting permission to excise a portion of skin for examination, but since the patient had a small wart on the thenar eminence of one hand, this was removed with a portion of the surrounding skin. Prof. B. J. Ryrie reports on it as follows:—

"The sections show a papilloma with 0·5 to 0·75 cm. of the surrounding skin on either side of it. The line of excision is sufficiently deep to bring all layers of the skin and part of the subcutaneous fatty areolar tissue under examination. The epidermis shows well-marked differentiation into the various layers. Stratum granulosum is very marked and there is a high degree of keratinisation. Corium and subcutaneous tissue appear normal and the fine muscular fibres are well developed. Epithelial skin appendages are entirely absent, there being no hairs, no sebaceous glands, and no sweat glands."

The patient was seen again in June, 1929, although there was no opportunity to overhaul him. He had still further improved; the hair on his head had grown still more, and his mother considered him much better.

Discussion.

Except for the fact that the bridge of the nose is not depressed and that the sexual development is backward the case corresponds exactly with those described by Goeckerman and MacKee and Andrews. With regard to the ætiology there seems no doubt that the condition is a true hereditary developmental defect frequently familial, the arrest of development occurring very early in intra-uterine life. Although the present case is, in view of the father's tabes, possibly a congenital syphilitic, there is no evidence in the other cases that syphilis plays any part in the ætiology.

A further interesting and practical point is the similarity in appearance, at any rate, in the early stages of some of these cases, to the clinical picture described by Hastings Gilford as progeria. Although this was not remarked upon in any of the cases

collected by MacKee and Andrews, the appearance of the present case when first seen in 1924 closely resembled the photograph of Hastings Gilford's Case 1 at 15 years of age and also his reproduction of Variot's case.[6] There was the same leanness, the same absence of hair, the wrinkling of the skin of face about the eyes and nose, the general dryness of the skin, the thin skull with visible veins coursing over it, the relative smallness and shortness of the lower part of the face accentuated by the ill-development of the alveolar portions of the jaw, and the absence of teeth. There was also the backwardness of sexual development. It is true that the lips were thick, but this could reasonably be accounted for as the result of muscular hypertrophy on account of the complete absence of teeth. The nose was thin and short. A diagnosis of progeria had actually been made.

In the discussion on Dr. Jean Smith's case shown at the Section for the Study of Disease in Children of the Royal Society of Medicine under the term abnormal dentition, Dr. Kingston Barton remarked on the facial resemblance to progeria, and Dr. Jean Smith stated that progeria had been at first suggested as the diagnosis but had apparently been ruled out on account of absence of cardiovascular changes and the lack of a dry withered skin.

Resemblance to Progeria.

It is of interest also that Gilford's Case 2 was first described by Hutchinson when 3½ years old as "congenital absence of hair and mammary glands with atrophic condition of the skin and its appendages in a boy whose mother had been almost wholly bald from alopecia areata from the age of 6." Hutchinson further described the nails as thin and curved backwards so as to present more or less of a hollow in the middle. Although Hutchinson described the teeth at the age of 3½ as all cut and tolerably regular, Dr. Jago, in describing the condition at the age of 14, stated "the teeth are abnormal in number, none are decayed, nor have any been lost or extracted. The canines, bicuspids, and incisors are normal but somewhat irregular, but there are no molars."

In Gilford's Case 1 the mammary glands also were absent, and unusually small nipples were present. The nails were very short, flat, ill-shaped, and membranous. The teeth were few in number, crowded, and erratic in situation and variable in size. The skin was soft and pliable and usually dry, although Gilford was able to detect sweat twice in hot weather. Gilford in 1911 looked upon progreria as a premature senile decay affecting the body as a whole, arising in an individual in a state of infantilism. He did not consider the evidence sufficient at that time to implicate the pituitary. He did, however, differentiate the senile appearance frequently presented at a somewhat later age by ateliotic dwarfs from true progeria.

Simmonds[7] described in adult women following embolic destruction of the anterior lobe of the pituitary the onset of cachexia, greying of the hair, loss of the axillary and pubic hair, wrinkling of the skin, loss of teeth, and a general appearance of premature senility. Later he reported[8] the case of a dwarf, 110 cm. in height, who died at the age of 21. At autopsy the posterior lobe of the pituitary was normal, but there was almost complete destruction of the anterior lobe with replacement by cysts which Simmonds considered the result of an embolism. It is noteworthy that, although he had already described moderate grades of apparent premature senilism in adults the result of embolic destruction of the anterior lobe, he makes no mention of its presence in this case.

Harvey Cushing[9] definitely accepts progeria as a pituitary syndrome. He publishes a remarkable photograph of a female, aged 8, as an example of the Hutchinson-Gilford syndrome of progeria. It differs, however, very strikingly from the Hutchinson-Gilford cases in the fact that she possesses well-developed eyebrows and an excellent head of coarse black hair. The shape of the lower part of the face is also quite different from the ill-developed lower jaw of progeria. The whole appearance of the case is much more suggestive of Gilford's ateliotic dwarfs with consecutive senilism which he definitely differentiated from progeria. Examples of this correlation he figures on pages 663 and 603 of his book.

It seems clear that anterior lobe deficiency commencing at an early age may lead to various degrees of dwarfing with infantilism and a more or less striking appearance of premature ageing, but these cases differ materially in appearance from the cases described by Hastings Gilford as progeria. In these cases an essential feature seems to be a more or less extensive ectodermal defect which in itself gives a peculiar aged appearance to the individual. In Gilford's Case 1, as in the present case, the nipples were completely absent, and this must have originated in an early stage of intra-uterine development. In other cases a similar ectodermal defect occurs as a hereditary anomaly without progressing to the visceral and vascular changes accompanying the full-blown picture of Gilford's progeria. Clinically in their early stages some of these cases simulate to a remarkable extent the appearance of Gilford's cases.

Should such a patient become affected with a chronic nephritis, to which he might be considered unduly liable on account of the frequency of chronic septic infections of the nose and the increased strain on the kidney from the defective sweat apparatus, his condition would certainly be indistinguishable from one of progeria. It might be suggested that the ectodermal defect in progeria included the pituitary; but of this there is no proof, and in both Gilford's cases at autopsy the pituitary, although not examined with the care that would now be devoted to it, was stated to be normal macroscopically both in size and appearance.

[6] Disorders of Postnatal Growths and Development, 1911.
[7] Deutsche Med. Woch., 1918, xxxi., 852.
[8] Ibid., 1919, xviii., 487.
[9] Brit. Med. Jour., 1927, ii., 1.

Clinical and Laboratory Notes.

PROGNOSIS IN MALIGNANT MELANOMA.

A REPORT ON FORTY CONSECUTIVE CASES.

BY HUMPHREY H. GLEAVE, M.B. LEEDS, M.R.C.P. LOND.,
LECTURER IN PATHOLOGY IN THE UNIVERSITY OF SHEFFIELD; LATE DEMONSTRATOR OF PATHOLOGY IN THE UNIVERSITY OF LEEDS.

DURING the 15 years 1910–24, 40 cases of malignant melanoma were examined in the pathological department of Leeds University, 22 arising in skin or mucous membrane and 18 in the eye. Thirty-six of these came from the Leeds General Infirmary, one from the East Leeds War Hospital, one from the Women's Hospital, and two from private sources.

Incidence of the Disease.—The in-patient admissions at the infirmary during this period were 136,609 and 36 cases of malignant melanoma were reported. However, as some of these patients were treated in the out-patient department the incidence is even less than the figures shown.

Age and Sex Incidence.—Of the eye cases there were 13 males and five females, the average age being 58·4 years. Of the skin cases there were seven males and 15 females, the average age being 56·3 years. The youngest patient was aged 27, the oldest 82. These figures may be compared with those of Broders and MacCarty (1916), who found an average age of 49 in a series of 70 cases. The Leeds figures suggest that the age incidence for eye and skin cases is the same.

Subsequent History of Cases.

1. *Eye Cases.*—Of the 18 eye cases, 15 have been traced. Five are alive and well after periods ranging

from 5 to 19 years. Three died within one year of operation, three within two years, and one each at seven, eight, and nine years. The cause of death could not be ascertained with certainty in all the cases, but several of the histories suggest the presence of secondary deposits. In the following three cases the presence of metastases was confirmed post mortem.

1. A man, aged 50, after having failing vision for two and a half years, was admitted for detachment of the retina with tumour. The eye was removed by Mr. A. L. Whitehead. Nine years later he was admitted under Lord Moynihan for intestinal obstruction, due to a large melanotic growth involving the sacrum and rectum. At autopsy the liver was found to contain a few tertiary deposits.

2. A man, aged 67, had had six weeks' history of eye trouble previous to removal of the eye (Mr. Whitehead). Thirteen months later, at autopsy, secondary deposits were found in liver, lungs, and pancreas.

3. A third man had a blind eye for 11 years. He first attended the infirmary for symptoms of malignant disease of the liver (Dr. Wardrop Griffith). Post mortem extensive deposits of malignant melanoma were found in the liver and peritoneum, and a primary tumour in the eye.

These cases illustrate the varying malignancy of the growth, and the last the remarkable latency which has been observed so often. Cairns (1923) reports a melanoma of the scapula secondary to a tumour of the eye removed 18 years previously.

2. *Melanoma of Skin and Mucous Membranes.*—The sites of origin were as follows. Eyelid 1, cheek 2, parotid region 1, neck 1, trunk 6, thumb 2, forearm 1, buttock 1, instep 1, great toe 2, anal canal 1, vulva 1, gum 1. In one case the tumour was found in a gland of the groin, and no primary was ever discovered. A history of pre-existing pigmented moles is recorded in eight cases. Of 20 cases traced, two remain without recurrence after five and seven years respectively. Of the 18 who died, 12 are considered to have had metastases. In two this was confirmed at autopsy; in the rest, either the growth was incompletely removed at operation, or enlarged glands, ascites, &c., were observed before death. There was one instance of multiple secondary deposits in the skin. In two others the presence of secondary deposits at death is probable.

One of these patients had a growth of the great toe and enlarged glands of groin removed by Mr. Littlewood. Both primary and secondary showed microscopically a melanotic growth of epithelial type. He remained well for ten years, and then returned for examination, when he was found to have malignant disease in the groin glands and in the liver. There was no indication of a primary source other than the original tumour. The latency of malignant melanoma is apparently not confined to tumours arising in the eye.

Of the 18 patients, 7 died within one year of the first operation, 3 within two years, 4 within three, 2 within four, and 1 each at six and ten years. Trauma was noted in the case reports in four cases. (1) "A fall of coal caused a mole on the cheek" 20 years before the onset of malignancy. (2) The top of a mole on the back was knocked off by a cricket ball four years before malignant ulceration began. (3) A spark from an anvil injured the thumb, and "something was cut out" one year later. Seven and a half years later a melanotic tumour developed on the site with secondary deposits in the axillary glands. (4) A malignant melanoma developed on the site on a shrapnel wound of loin received eight months before. There had never been any moles on the site. The patient died four months later, and at post mortem Prof. Stewart found extensive metastases (liver, pancreas, testes, kidneys, heart, brain, bones, and gastro-intestinal tract). These cases may be compared with those of Eve (1903), where the tumour developed on the site of an injury received in one instance 20 years and in another 12 years previously. There is no record in this series of the probably more important factor of repeated slight trauma or irritation as emphasised by Dawson (1925), who noted in one case that simple repeated scratching of a mole was followed by rapid development of malignancy.

Comparison of Malignancy of Tumours of the Skin and of the Eye.—Out of 15 eye cases traced, five are alive and well, 19, 15, 13, 12, and 5 years respectively, subsequent to the removal of the eye. Out of 20 skin cases traced, only two are alive (toe five years, scapular region seven years). Taking deaths from all causes, it is found that ten eye cases survived operation for an average period of four years and two months, and 18 skin cases for two years and four months. Eve, judging from Lawford and Treacher Collins's cases of melanotic sarcoma of the eye, in which 20 out of 79 patients were alive three years after operation, states that the malignancy of this tumour is somewhat lower in the eye than in the skin. Broders and MacCarty report four eye cases in their series of 70 cases of melano-epithelioma, and reach the same conclusion. The lower malignancy of the tumours of the eye is probably not due to earlier treatment. These tumours metastasise by the blood stream, whereas the tumours of the skin usually affect the regional lymph nodes before generalisation. Protection of the eye from trauma and a less abundant blood-supply may be factors in the process. When metastatic or recurrent growth occurs, the rate of progress of the disease seems to be the same in both eye and skin cases. Thus in Lawford and Treacher Collins's series of 26 eye cases with secondary deposits the average duration of life after operation was two years and four months.

Total Duration of the Disease in Skin Cases.—The notes allow of an estimate of the total duration of the disease from the onset of malignancy (increased pigmentation of mole, increased growth or ulceration), in ten cases of melanoma of the skin with metastases. This period averages two years and ten months (shortest nine months in the case arising in a shrapnel wound, longest four and a half years in a melanoma of instep, both confirmed at autopsy). However, as mentioned above, one patient apparently survived 11 years in all. This finding is an agreement with Dawson, who states "the generalisation is said to average three years from the time of malignancy in the primary growth, but in my series it took place earlier in most of the cases."

Treatment.—The frequency of involvement of the regional lymphatic glands of malignant melanoma of the skin and the instance quoted of the patient who survived ten years after removal of glands invaded by growth, confirm the desirability of attacking the glands along with the primary tumour.

I am indebted to the honorary officers of the Leeds General Infirmary for permission to make use of their cases, and to Prof. M. J. Stewart for his interest and help.

References.

Broders, A. C., and MacCarty, W. C.: Surg., Gyn., and Obst., 1916, xxiii., 28.
Cairns, F. D.: Brit. Jour. of Surg., 1922–23, x., 290.
Eve, F.: Practitioner, 1903, lxx., 165.
Dawson, J. W.: Edin. Med. Jour., 1925, xxxii., 710 and 712.
Lawford, J. B., and Collins, E. Treacher: Roy. Lond. Ophth. Hosp. Rep., 1893, xiii., 104.

THE USE OF GLYCERIN IN CÆSAREAN SECTION

By Margaret Salmond, M.D. Lond.,
Senior Assistant, Obstetrical and Gynæcological Unit, Royal Free Hospital.

Glycerin is now recognised by obstetricians as a valuable drug. It is used for drainage in local uterine sepsis and for the control of postpartum hæmorrhage in deliveries by the normal route. Little, however, has been written about its use as a hæmostatic in delivery by Cæsarean section. This year, on the suggestion of Dame Louise McIlroy, it has been used almost as a routine in the obstetrical unit of the Royal Free Hospital and has been found to be most successful in controlling hæmorrhage. Glycerin is also valuable in that it promotes drainage of the uterus during the puerperium.

The technique is simple. After removal of the placenta the uterine cavity is swabbed out with gauze

dipped in glycerin and held on a sponge holder. The uterus is wrapped in hot towels and the abdominal cavity and wound protected by mattresses. Retraction of the uterus nearly always follows at once.

It seems possible that this method may obviate the necessity for hysterectomy following Cæsarean section in the few cases where this is required, since it appears not only to control hæmorrhage but is of proven value in the treatment of local uterine infections. We have had no opportunity so far of testing this.

This method was used in the following seven cases, in all of which the classical operation was performed, the patients being in labour at the time of the operation.

CASE 1.—Primipara, aged 32. Antenatal condition normal; contracted pelvis. Labour, Jan. 29th, 1929: vertex presentation, membranes unruptured; one vaginal examination made. Cæsarean section for disproportion, hæmorrhage not excessive; glycerin used in cavity. Puerperium afebrile until sixth day when breast abscess developed.

CASE 2.—Multipara (2), aged 30. Previous children stillborn, died before labour began. Antenatal condition: toxæmia, poor general condition. Wassermann reaction negative. Admitted for some weeks before labour for rest and diet. Contracted pelvis. Labour, Oct. 22nd, 1928: vertex presentation, membranes unruptured; no vaginal examination made. Cæsarean section for disproportion; hæmorrhage very severe, controlled with the help of glycerine. Blood transfusion. Puerperium was febrile the first week. Temperature rose to 100·2° F. twice. Patient developed superficial abscess under left eye. Obstetrical condition satisfactory and no other cause found for pyrexia.

CASE 3.—Primipara, aged 27. Antenatal condition: *Bacillus coli*, pyelitis. Admitted for treatment; contracted pelvis. Labour, Nov. 25th, 1928: vertex presentation, membranes ruptured. One vaginal examination made. Cæsarean section for disproportion; hæmorrhage not excessive; glycerin and blue paint used in uterine cavity. Puerperium afebrile.

CASE 4.—Primipara, aged 22. Antenatal condition normal; contracted pelvis. Labour, Jan. 12th, 1929: vertex presentation, membranes unruptured; one vaginal examination made. Cæsarean section for disproportion; hæmorrhage profuse. Glycerin used—hæmorrhage controlled. Puerperium afebrile, involution somewhat delayed. Lochia normal. Glycerin drain on twenty-second day, after which uterus involuted normally. Toxic myocarditis.

CASE 5.—Multipara (2), aged 43. Previous children both stillborn after instrumental deliveries. Antenatal condition: toxæmic; admitted for rest and diet. Contracted pelvis. Labour, August 15th, 1929: vertex presentation, membranes unruptured. No vaginal examination made. Cæsarean section for disproportion; hæmorrhage fairly profuse, controlled by glycerin. Puerperium. Temperature 100·4° F. first night following operation, since afebrile.

CASE 6.—Primipara, aged 27. Antenatal condition normal; contracted pelvis. Labour, August 10th, 1929: vertex presentation; the patient ruptured her membranes four days before admission but had no pains and did not come to hospital; no vaginal examination was made. Cæsarean section for disproportion. Hæmorrhage profuse, controlled by glycerin. Puerperium was febrile for nine days. Maximum temperature 101° F. on seventh and eighth days. Lochia offensive. Glycerin drainage of uterus on eighth day. Temperature fell within 24 hours and has remained normal since.

CASE 7.—Multipara (2), aged 33. Previous children: (1) stillborn, (2) Cæsarean section for disproportion. Contracted pelvis. Antenatal condition normal. Labour, May 8th, 1929: Cæsarean section for disproportion, membranes ruptured; no vaginal examination made. Glycerin and flavine used in uterine cavity. Hæmorrhage not excessive; sterilisation performed. Puerperium. Temperature 101° F. once on the eighth day, otherwise afebrile.

The condition of all these patients and their infants were satisfactory on discharge. It is impossible to describe the rapidity with which retraction occurs when glycerin is used, but it is hoped that the account of these few cases will stimulate others to try this method for the control of hæmorrhage and for drainage of the uterus.

I am indebted to Dame Louise McIlroy for permission to publish these cases.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN MANCHESTER.

(*Continued from p. 613.*)

SECTION OF PUBLIC HEALTH.

MATERNAL MORTALITY.

Dr. R. VEITCH CLARK (Manchester), who presided over the discussions of this Section, said that maternal mortality was rather overshadowed by the mortality from the great killing diseases, but that it had an even more disastrous effect on family life. Maternal mortality had for its incidence only the child-bearing women, whilst tuberculosis had for its incidence the whole population. If we took the ratio of deaths to risk we should find that childbirth mortality was three times as great as that of any other killing disease.

The opening paper by Dr. J. PARLANE KINLOCH, chief medical officer, Department of Health for Scotland, was based largely on the conclusions arrived at in the Report on Maternal Mortality in Aberdeen, 1918–1927.[1] Dr. Kinloch submitted the thesis that with our present knowledge a significant reduction in maternal mortality would be immediately attained by an extension of adequate antenatal services and the institution of the new midwife-doctor combination defined in the report named. It had been shown that 90 per cent. of the deaths from sepsis were due to the hæmolytic streptococcus, on which attention should be concentrated. Prevention and treatment could not be separated because early treatment of puerperal sepsis involved isolation and the prevention of further cases of sepsis by contagion. One of the advantages of the notification of puerperal pyrexia had been the earlier discovery and treatment of sepsis cases. In consequence, during the four years for which pyrexia had been notifiable, the incidence of puerperal fever had increased from 3 per 1000 births prior to 1925 to 12 per 1000 births in 1928. This easlier discovery must have a profound effect on the efficacy of treatment.

Mr. J. BRIGHT BANISTER (London) thought there was a danger of going too fast in revolutionising the practice of obstetrics, and that acrimony should not enter into this great problem. He considered that autogenous infection was more common than some authorities would admit. Eclampsia and toxæmia could be greatly reduced by antenatal treatment. He favoured delivery in institutions, wherever possible, and thought this custom was one of the causes of the low maternal mortality in Scandinavian countries.

Prof. D. DOUGAL (Manchester) said there had been much needless exaggeration which might almost lead one to believe that the process of coming into the world was as fatal as the process of passing out of it. It was, however, true that with our present knowledge 50 per cent. of the deaths need not occur. Sepsis was the greatest single cause. Some general practitioners still employed handywomen, and even nurses with the C.M.B. certificates had low ideals of asepsis. The asepsis of the general practitioner might be improved. Hæmorrhages could not be foreseen, but might be due to faulty conduct of labour. There should be a longer training of medical men with a view to more conservative midwifery. The relief of pain should receive attention, with a view to the avoidance of unnecessary operations. We had to consider how the general practitioner was to get experience if he did no normal cases in accordance with the new proposals. The training of the midwife should be improved and she should go through a pupilage. Handywomen must go. Sterilised outfits must be provided. The general practitioner's status would be improved if he were relieved of normal cases. A separate anæsthetist should be available

[1] See THE LANCET, 1929, i., 85.

and a consultant should be within call. He favoured the use of portable obstetric tables, and expressed his approval of the proposed midwife-doctor combination.

Dr. H. L. MURRAY (Liverpool) also advocated hurrying slowly. We were awaiting the result of the national inquiry. He spoke in favour of antenatal treatment and the acquisition of a surgical intranatal sense. The expectant sense had been to some extent lost. In some cases the midwife insisted upon the doctor operating. Sepsis sometimes occurred in an unaccountable manner. Doctors should only employ midwives, but he thought the doctor should be present at normal confinements.

Dr. A. K. CHALMERS (Glasgow) pointed out the advantages of a hospital on the pavilion system for the separation of clean from suspected cases. Antenatal examination should be made a condition of admission to a maternity hospital.

Dr. JAMES YOUNG (Edinburgh) expressed his approval of the scheme of the Association for a national midwifery service. He thought the bogy of autogenous infection had been laid and that the statistics of the East End Maternity Hospital proved that it was negligible. He agreed with Dr. Chalmers as to the advantages of pavilion hospitals and that they must not have normal and abnormal cases in one building. Cæsarean cases were liable to be infected by contagion.

Dr. W. H. F. OXLEY (London) said that the East End Maternity Hospital had been going for 40 years. It was staffed by midwives who called in the general practitioners in the neighbourhood. Much of the credit for the good work was due to the head midwife, Miss Anderson, whose enthusiasm had inspired her staff. They had been doing antenatal work before Ballantyne began. Their cases were booked early and a forward look-out was kept. They had almost stamped out eclampsia, as among the last 10,000 confinements there had been only one slight fit in the present year. By intensive indoor treatment for albuminuria and by induction in cases which did not clear up under it, they were going a stage further than preventing eclampsia, and had reason to believe that they were diminishing the incidence of recurrent toxæmia and of chronic nephritis. Their treatment for placenta prævia included as little manipulation as possible. Early turning was not always needed. They had had no maternal death from placenta prævia among the last 14,000 cases. He thought antenatal treatment might be carried too far and become too much of a "stunt." Antenatal care was the preparation for the battle and the main thing was wise midwifery at labour. Their midwives did not use gloves but a proper strength (1 in 1000) of perchloride of mercury. Several pupil midwives examined each case but with carefully disinfected hands, and no harm was done thereby. The primipara had a threefold risk of puerperal pyrexia, and he had satisfied himself that this increased risk was due to trauma of the cervix. No doctor with an obstetric conscience could be forced by a midwife to interfere or to use forceps. If he had not developed such a conscience it was the fault of his teaching.

Dr. FARQUHAR MURRAY (Newcastle-upon-Tyne) thought the pupil midwives, who were practically handywomen, should not be too numerous. The hospital cases should be divided into clean, suspect, and dirty, and there would be no rise of temperature in the "clean" wards. Consulting obstetricians were needed for domiciliary cases. In nursing homes a separate nurse should be provided for each case. Special nurses should be provided for cases with early signs of sepsis through a domiciliary nursing service of a maternity hospital. He thought antenatal examinations should be conducted at a special centre and not in a doctor's surgery. He also spoke against the abuse of lysol.

Prof. J. HENDRY (Glasgow) agreed in deprecating the abuse of lysol and of vaginal examinations unnecessarily and badly done by midwives. Refresher courses for midwives were very necessary. A larger proportion of the doctors' cases were abnormal, because they included primiparæ, those who had had difficulty in previous labours, and those who desired to have chloroform and forceps. If the puerperal temperature was charted four-hourly much more pyrexia would be shown.

Dr. ARTHUR GILES (London) thought that general practitioners should attend normal labours. They must not, however, apply forceps to save their own time, and they should have a maternity hospital available for their patients. He believed in boiled gloves rather than perchloride.

Miss FRANCES IVENS (Liverpool) said that they needed properly educated midwives and must see that they were properly paid.

Prof. C. G. LOWRY (Belfast) said they need not wait for research but could apply the well recognised principles adopted at the East End Maternity Hospital. A rise of blood pressure always preceded albuminuria. There had been no case of eclampsia for nine years in his hospital. He disagreed with Mr. Bright Banister with regard to autogenous infection. Morphia and hyoscine were useful for avoiding interference in labour. It might also be good to use similar sedatives for the relatives! He was somewhat surprised at the number of vaginal examinations permissible for pupil midwives at the East End Hospital. He believed that ill-washed hands and unnecessary separation of the labia minora were frequent causes of bad results. Antenatal work should be done by those who would conduct the labour.

Dr. MIDDLETON MARTIN (Gloucester) thought the B.M.A. report a very practical contribution. In Gloucestershire the services of obstetric consultants were available, and there were maternity beds in each cottage hospital.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

THE DIAGNOSIS OF FRONTAL TUMOURS.

Dr. JAMES COLLIER (London) opened the discussion. He said that from the very nature of the cerebral hemispheres the regional diagnosis of disease situated therein was often a matter of peculiar difficulty. In considering the possible signs of tumours within the frontal lobe, if we were to advance in knowledge, we must divest our minds of any idea of local function, mental or otherwise, peculiar to lesions of the prefrontal lobes. We must expect a varying clinical picture, and often one which was negative so far as localising symptoms were concerned. It must be borne in mind that there exists a great facility in compensation for local lesions within this region, so fully emphasised by Gowers 40 years ago, and also the disturbing effects that long-standing increase of intracranial pressure and hydrocephalus have upon the value of those signs which are used for localisation. We must strive to collect those signs which have been useful to us in the successful localisation of frontal lobe tumours. He might conveniently divide the signs which are used for the localisation of a tumour within the prefrontal lobes into five categories, thus: (1) the negative signs; (2) the contiguous signs; (3) the signs which have been deemed peculiar to, or especially marked in, prefrontal lesions; (4) the signs peculiar to lesions within the anterior fossa of the skull; and (5) the signs revealed by ventriculography.

Five Categories of Signs.

Negative Signs.—The negative signs were of especial importance, since tumours within the posterior fossa below the tentorium, and those of the occipital, parietal, central, and left temporal regions, except sometimes in their latest stages, gave unmistakable signs of their position. If no definite localising sign was present, therefore, it was often a matter of a prefrontal or a right temporal site.

Contiguous Signs.—The contiguous signs were those produced by the extension of some process connected

with the growth—pressure, œdema, or vascular disturbance—into the neighbouring ascending frontal gyrus and giving rise to motor weakness. Extension might occur into the insula of the left side, giving rise to interference with the execution of language, or into the paths converging to the anterior part of the corpus callosum and so producing motor apraxia. The motor weakness was usually seen first and most in the face, rarely in the arm, and almost never in the leg. It was perhaps the most important lateralising sign of a frontal tumour, but it did not distinguish a frontal tumour from a temporal tumour, which also frequently caused facial weakness as a contiguous sign. Difficulty in the exteriorisation of language was a certain lateralising sign of a left hemisphere lesion in a right-handed person, but it was also caused by tumours of the left insula and those of the anterior temporal region. It should be of the nature of a stammering defect or of a "pure aphasia" if due to a frontal lobe lesion. Pure executive apraxia appeared to be a certain sign of prefrontal involvement and to indicate a left-sided lesion. Presumably it pointed to a lesion extending deeply and far back in the upper two prefrontal convolutions.

Signs Peculiar to the Frontal Lobe.

Mental Symptoms.—Mental changes of a very variable order, from slight changes in the way of loss of reserve, childishness, and change of character, to severe disturbance such as megalomania, "witzelsucht," and dementia did result from tumours of the prefrontal region. Dr. Collier wished to ask whether the Section agreed with Cushing's very confident statement that mental changes were always much more conspicuous in left-sided lesions, for he, the speaker, was doubtful as to this point. Extensive lesions of the frontal lobe often existed without any obvious mental change. The explanation seemed to lie in the possibility of compensation, and whether the other frontal lobe was relatively intact as regards its callosal connexions, since bilateral frontal lesions always gave rise, both experimentally and clinically, to marked mental reduction. The point of importance was whether mental changes were of sufficiently higher incidence in prefrontal lesions, as compared with lesions of other regions of the brain, as to make them reliable symptoms when other localising symptoms were absent. The speaker wished specially to emphasise the early loss of memory and the mental reduction occurring in tumours of the splenium callosi, because it might be the key to the explanation of mental changes and their variability in cases of cerebral tumour. He suggested that in lesions of the prefrontal lobe mental changes were only conspicuous when the tumour extended deeply and cut the callosal and other transcortical paths.

Frontal tremors, more marked upon the homolateral side and sometimes confined to that side, like other signs at first described as indicating prefrontal lesions, had come to belong also to the temporal lobe.

The "*grasping and groping*" *reflex* was, as far as he, the speaker, knew, a certain sign of prefrontal location which had not yet been seen with lesions elsewhere. Dr. Gordon Holmes thought it was seen with very extensive frontal lesions, but the speaker disagreed with this opinion. Dr. M. Critchley associated it with lesions high up and far back in the prefrontal region.

Conjugate deviation of head and eyes, or of eyes alone, to the contralateral side, explained by the involvement of the frontal ocular area said to occupy Exner's region in the second frontal gyrus, had been repeatedly emphasised as of locating and lateralising value. It seemed to the speaker certain that every cortical region must of necessity be an origin for inducing conjugate deviation, considering the necessary association in life of conjugate deviation with every movement and sensation, and therefore conjugate deviation could not be in any way special to the prefrontal lobes; nor did he believe that there was any special region for this function. When present it was of certain lateralising value for tumours in any part of the hemisphere. It might be seen in the form of persistent deviation to the contralateral side, or of weakness and unwillingness in deviation to the homolateral side.

Loss or diminution of the trunk reflexes might be of great lateralising value and was said to be valuable in frontal location. But he held that it was much more characteristic of the temporal tumour.

Incontinence was sometimes very marked in frontal tumours, even when the mental aberration was inconspicuous. He thought he had seen it more often in temporal tumours.

Papilloedema was said by Mr. Leslie Paton to occur earlier and more severely with tumours of the hemisphere the farther forward these were situated. Recently Stopford had analysed another series of cases, and had come to the conclusion that the more posterior the situation the earlier and more intense the papilloedema. The speaker was inclined to agree with Stopford, although he did not think papilloedema was of any value either in localisation or lateralisation.

Lethargy of a deep but rousable kind had occurred many times in frontal tumour, and when existing without headache or papilloedema it had caused several cases to reach the post-mortem room with the label "lethargic encephalitis."

Fits of different kinds often occurred with frontal tumours. The convulsions he had seen had always commenced with conjugate deviation, which deviation had been a sure lateralising sign. Status epilepticus was an interesting frontal symptom. He had no knowledge of any other region of the brain in which a tumour had produced status epilepticus.

There remained for consideration certain phenomena, such as Meyer's reflex, Leri's reflex, and Hoffmann's reflex, which were said to be absent in prefrontal lesions, and Wessenberg's sign which was supposed to be found only when a prefrontal lesion was present.

Lesions of the Anterior Fossa.—Ventriculography.

Signs peculiar to lesions of the anterior fossa were those of pressure upon the olfactory tract, the optic nerve or chiasma, or upon the nerves and vessels passing through the sphenoidal fissure, and those of bony involvement. These were always certain localising and lateralising signs, but they only obtained with a hard tumour coming to the surface of the orbital lobe or with a growth of meninges or bone.

There remained the method of ventriculography, which in skilled hands had resulted in many brilliant successes in this and in other difficult regions of the brain.

Discussion.

Dr. W. J. ADIE (London) said that the "grasping reflex" had been of value in localising tumours of the opposite frontal lobe. The fully developed reflex was very striking but it also appeared in various incomplete forms; hence the term "grasping reflex" did not cover the entire phenomenon. In his opinion, it was not necessarily confined to extensive lesions. The fits seen in frontal lobe tumours might consist of some movement of the head, eyes, and trunk to the opposite side with simultaneous involvement of the limbs of the contralateral side. Such an attack, however, might also occur in temporal lobe tumours. A fit beginning with clonic movements of the eyes with deviation to the opposite side was of localising value in frontal lobe tumour; in fact, such movements might constitute the entire fit. Meyer's reflex was of great value, a unilateral exaggeration being a lateraliser to the opposite side and a localiser to the opposite frontal lobe. Dr. Adie considered that ventriculography was of great assistance in frontal lobe tumours.

Mr. GEOFFREY JEFFERSON (Manchester) considered that ventriculography could be well replaced by the method of "ventricular estimation." This consisted in the bilateral tapping of the ventricles by the

occipital route, the withdrawal of cerebro-spinal fluid from each, and the comparison of the volume of the two fluids. He had not found the injection of dyes of great value. Mr. Jefferson then described certain cases of frontal lobe tumour which he had encountered, and illustrated his cases with admirable lantern slides.

Dr. L. J. J. MUSKENS (Amsterdam) said that he had also met with a case of frontal lobe tumour showing the sudden occurrence of status epilepticus without previous symptoms. Bruns had called attention to ataxia and vestibular symptoms in frontal lobe tumours. In 1917, he (the speaker) had pointed out that cats, after extensive right-sided lesion, and patients with right frontal tumours, tended to fall to the left. This observation was confirmed by Grossmann in 1919, who described six cases of frontal lesions from bullet wounds, all of whom fell to the contralateral side.

Dr. C. WORSTER-DROUGHT (London) considered that mental symptoms were more frequent in frontal lobe tumours than in those affecting other regions of the brain. In his experience the mental symptoms associated with right-sided lesions were slighter than those accompanying left-sided lesions; the former might consist of mental memory defects while the latter varied from euphoria to dementia. He agreed that involvement of the white matter of the brain was the important determining factor. Tremor he had found of no assistance, but the "grasping reflex" was a valuable sign when present; it was, however, often absent. Incontinence was a very frequent sign of frontal lobe tumours and might be the only symptom present or occur with only slight mental dullness. The absence of the epigastric and abdominal reflex on the homolateral side was also helpful. He had been impressed with the frequent absence of headache in cases of frontal tumour he had seen. Air ventriculography was of considerable assistance, but he had come to regard the procedure as somewhat risky in posteriorly situated tumours; he was, therefore, glad to hear Mr. Jefferson's opinion regarding the value of ventricular estimation.

Dr. J. GODWIN GREENFIELD (London) commented on the extraordinarily long history and the hardness of the tumour often met with in the astrocytoma type of frontal glioma. There was a greater tendency to degeneration and cyst formation in frontal lobe tumours; probably this resulted from some peculiarity of the blood-supply.

Dr. M. CRITCHLEY (London) stated that the phenomenon described by Adie and himself as "forced grasping and groping" had been originally reported by Janischewsky as the "réflexe de la préhension." The phenomenon was made up of several component parts. First, it comprised a slow and gentle flexion movement of the fingers on stimulation of the palm. The second phase consisted in a forceful and involuntary closure of the fingers when an attempt was made to withdraw an object from the patient's hand. The involuntary nature of the inability to relax the grasp was shown by the fact that a painful stimulus—e.g., a live electrode—still elicited an identical firm closure of the hand. After the object had been finally extracted from the patient's hand, the third phase of the phenomenon became manifest by a slow full extension of the fingers followed by a slight closure. In this way the patient's hand might again grasp the object that had just been withdrawn ("after-grasping"). In some cases a fourth phase was seen; during the examination of some other part, the patient's affected hand continually obtruded itself by clasping or groping towards the examiner's hands ("forced grasping"). It was now realised that the grasping phenomenon might affect regions other than the hand—e.g., the sole of the foot and the jaws. Although forced grasping and groping might be seen in various states of stupor and coma, and in some cases of diffuse cerebro-vascular disease, its presence in cerebral tumour usually indicated a frontal localisation. Although of great localising value, its importance as a lateralising sign required qualification. Cases have been noted in which the grasping phenomenon had occurred on the same side as the tumour, but in such instances there had been a severe degree of hemiplegia on the contralateral side. Presumably in such cases the tumours were large ones capable of producing bilateral signs.

Dr. F. R. FERGUSON (London) emphasised the importance of investigating all possible channels of information. Daily physical examination of the patient often revealed such variation in the physical signs that it was impossible to correlate them and localise the tumour. He instanced a case showing a marked right-sided "frontal tremor" but with other signs at one time indicating a left-sided frontal lesion and at others a right-sided. At autopsy a cholesteatoma was found exactly in the middle line at the posterior end of the corpus callosum. With regard to the localising value of the "grasp reflex," he mentioned a case with a right-sided grasp reflex in whom a left cerebellar tumour was found at autopsy. The cerebration and coöperation of this patient, however, were very poor and there was evidence of secondary hydrocephalus.

Mr. A. A. MCCONNELL (Dublin) considered that ventricular estimation was of more value in lateralising than in localising, and especially with frontal lobe tumours. A fallacy, however, was that frontal tumours might occlude the foramen of Monro and prevent the air reaching the opposite side.

SECTION OF OPHTHALMOLOGY.

Mr. J. GRAY CLEGG (Manchester) being in the chair, Mr. W. H. KIEP (Bradford) read a paper on a modification of

Lagrange's Operation for Glaucoma.

He referred to cases of late infection after trephining operations, and said it was obviously desirable that the membranous covering of any such fistula should be sufficiently thick to prevent entrance of organisms or their toxins. The operation he had adopted recently was a modification of Lagrange's; it had the merit of being easier to perform, and also of making a less extensive wound of the sclera. His own procedure was as follows: the conjunctiva and subconjunctival tissues were grasped with forceps 6 or 7 mm. above the limbus, and divided with scissors; Tenon's capsule was also divided, and a flap including these structures was reflected; a groove was cut in the sclera 2 to 2½ mm. above the limbus, making a small furrow here; a keratome incision, of 3 to 4 mm., was made through this furrow; the keratome was withdrawn as quickly as possible in order to avoid any great loss of aqueous; the prolapsed iris was removed, securing a peripheral iridectomy; a small piece of the anterior lip of the incision was excised with scissors; the conjunctival flap was sutured with one stitch; it was practically always possible to get the iris back into position by manipulation without introducing any repositor into the anterior chamber; in this way further loss of aqueous was avoided. The drawback of the operation was that sometimes episcleral vessels of considerable size were cut. Otherwise he had found this operation no more difficult than Elliot's, and less difficult than Lagrange's. There was a minimum disturbance of intra-ocular structures. It was often possible to do it with little loss of aqueous. On an average, the anterior chamber regained its normal depth in from 48 to 72 hours after the operation. A fistulous orifice of 2 mm. width was obtained. There was ample protection from late infection. He had performed the operation successfully in one case where a large iridectomy had previously been done.

Mr. W. B. INGLIS POLLOCK (Glasgow) said that now for some years he had kept strictly to the Lagrange operation. Where the tension was much raised at the time of the operation he always did a

posterior sclerotomy; the Lagrange operation could be done immediately after the posterior sclerotomy.

Mr. A. B. CRIDLAND (Wolverhampton) said that after seeing Lagrange do his operation at Oxford in 1907 he had adopted it. There was no doubt that it was a difficult operation. An essential point was that you must "shave the base of the iris." Tension should first be brought down as low as 40. Any modification of Lagrange's operation that made it easier was to be welcomed. In 20 years he had never seen a case of late infection after it.

Mr. A. F. MACCALLAN (London) said that for the last five years he had never seen a case of late infection after trephining among his own cases or those of his colleagues. He had frequently seen superficial inflammation of the conjunctiva in trephined eyes without any infection of the deeper structures. Where hæmorrhage from episcleral vessels occurred he had found the application of a little dry wool moistened with adrenalin solution sufficient to arrest the bleeding.

Mr. H. H. MCNABB (Manchester) mentioned a case of late infection which occurred 18 years after an Elliot's trephining operation.

Mr. E. E. MADDOX (Bournemouth) described some modifications of Lagrange's technique which he had adopted. One of these consisted in slicing the crescent of sclera—i.e., making a series of transverse cuts in it with scissors.

The CHAIRMAN said he had adopted Elliot's trephine operation almost regularly, with slight modifications and had not seen late infection following it for a considerable time.

Mr. KIEP, in reply, said it was a matter of the utmost importance that the diaphragm of the eye should not be allowed to come forward. He had given up doing posterior sclerotomy, because he found that tension could be sufficiently reduced by medical means—bed, saline cathartics, eserine, dionine, and fomentations; and he had found Duke-Elder's method of reducing tension by intravenous injection of hypertonic saline solution very useful. In certain cases there was danger of hæmorrhage from posterior sclerotomy. As to the difficulty of Lagrange's operation, that was a matter of personal opinion. There were certainly some expert operators who found it presented difficulty. In his experience it was far easier to place the incision accurately with a keratome than with a Graefe knife. His own method involved only the minimum of fuss and hæmorrhage. He would not advise operation in cases of very high tension especially if it had been present for some days, particularly in old people with degenerated arteries. In such cases he would first reduce tension by Duke-Elder's method, and operate about a week after.

Mr. CRIDLAND (Wolverhampton) then read a paper on

Minor Injuries of the Eye in Industry.

These injuries, he said, ranked high in the list of causes of blindness. Not less than 100 cases of total blindness per annum were due to this cause in the United States of America. Eye injuries, according to Prof. Collis, constituted 5 per cent. of all accidents in industry reported by certifying surgeons. Estimates of the proportion of cases of blindness due to accidents varied from 7·2 per cent. in Scotland to 13·5 per cent. in U.S.A. In this paper his object was rather to direct attention to the minor injuries of the eye, and especially to their economic effect, as well as the steps necessary for their prevention. At his own hospital at Wolverhampton 6880 cases of accident to the eye had been dealt with in 1928, as compared with 6040 other new cases due to disease or requiring refraction testing. In the last 20 years the proportion of accidents to other cases at this eye hospital had increased from 39 per cent. to 53 per cent. The vast majority of these were, of course, minor injuries, especially foreign bodies, mostly small, that did not penetrate the eye. In 1928 the giant magnet was only used in 12 cases. From the point of view of occupation these patients might be divided into three groups: (*a*) occupations involving exposure to small flying particles—e.g., from grindstones or emery wheels, 51 per cent.; (*b*) occupations involving exposure to chips of metal, 26 per cent.; (*c*) miscellaneous—miners, roadworkers, painters, plasterers, &c., 23 per cent. Injuries varied in severity from a simple foreign body on the cornea to burns of the eyelids, or lime in the eye. Foreign bodies on the cornea furnished no less than 90 per cent. of the cases. Abrasions of the cornea provided 5 per cent., and there were 5 per cent. of miscellaneous injuries including burns, contusions, &c. In regard to protection, the following facts were elicited, based on information in 406 cases:—

1. Protection was not available in 70 per cent.
2. Protection was admitted to have been available, but not used, in 19 per cent.
3. Protection had been made use of, but had not prevented the injury in 11 per cent.

As regards time lost from work owing to the accident a series of 426 cases were divided into three groups:—

1. Those who lost from 1 to 2 hours, comprising those presumed able to return to work at once—371 cases.
2. Those who lost from 2 to 8 hours—48 cases.
3. Those who lost from 8 to 24 hours—7 cases.

The above figures probably underestimated the time actually lost. All things considered, it would be within the mark to say that on the average three of these minor eye injuries meant that the employer lost a full day's work. From the point of view both of employer and employed it was a matter of urgency to prevent such injuries. There were two obvious ways of doing this: (1) to ensure that the flying particle did not reach the eye, and (2) better still, to eliminate the flying particle altogether. On these two essentials the three main principles of prevention were based: (1) mechanical guarding, (2) education of workmen and foremen, and (3) engineering revision. Under the first heading came goggles of various forms, machine guards and shields, face-masks, helmets, or hoods. Goggles of the right kind properly worn and kept in order were the most important of these. The difficulty lay in producing ideal goggles at a reasonable price. For workers at emery wheels, a cheap but very effective form of protection against light particles was a piece of silk gauze worn as a veil over the eyes. These could be supplied at 2*s.* a dozen. Workmen should be made to realise the risk they ran, and how best to avoid the danger. In the third method of prevention, engineering revision, lay the hope of the future; it sought to eliminate the underlying cause, not merely to cover up the danger points. This end might be attained by the changing of a process of manufacture, by the redesigning of a machine or tool, or rearrangement of the physical equipment of a plant, or changing of the method of work. The introduction of the automatic machine was one instance. In America some success had followed the employment of "safety engineers"—men whose duty it was to concentrate on engineering revision, and also to give special attention to the education of the workmen by propaganda and various ingenious and telling methods. For instance, in one workshop an enucleated eye was hung up in a bottle in a conspicuous place as a warning. The psychology of the workman must be considered. In this country, perhaps, education in this matter was more difficult owing to the spirit of indifference to danger, coupled perhaps with ignorance of the risks run. The subject was a very wide one, and each type of occupation called for special study and investigation. At present the economic loss from this cause was not realised.

Mr. N. BISHOP HARMAN (London) mentioned that it was possible for flying particles to pass between the goggles and the face, and strike the eye—e.g., in overhead work.

Mr. T. AUBREY JONES (Stoke-on-Trent) spoke of the deeply rooted opinion among miners that glasses of any kind are an absolute danger when working down in a coal mine. He had seen very few injuries caused by wearing glasses. Many injuries in the

mines would be prevented by wearing ordinary glasses. He thought Mr. Cridland's estimate of time lost by these injuries was too low.

Mr. H. L. G. LEASK (Glasgow) also referred to the miner's strong prejudice against glasses.

Mr. TUDOR THOMAS (Cardiff) said that in mines clouding of the glasses by dust and by sweat, especially in hot mines, might increase the liability to accident.

Mr. H. R. BICKERTON (Liverpool) said that each occupation required its own form of protection. It was useless to try to educate the workmen. They must preach to the employers and insurance companies.

Mr. CRIDLAND, in reply, said he had only touched the fringe of the subject. Ricochet would explain many of the cases where a flying particle got behind the workman's goggles. Side-pieces to the protective goggles had the objection that they were likely to cause sweating and dimming of the glass. In regard to miners, he did not think they would be induced to wear glasses, nor did he think it feasible that they should. All emery wheels ought to be fitted with proper guards. He wished to emphasise another aspect of these injuries—namely, the unnecessary burden thrown on the hospitals by the large number of these preventable accidents. In his experience insurance companies were very hard to educate in this matter.

Dr. T. L. DE COURCY (Liverpool) read a paper on the

Significance of Vitreous Opacities.

After referring to the work of Miss Ida Mann and Mr. Duke-Elder, he pointed out that any alteration in the metabolism might affect the vitreous. Many focal infections might show no other result in the eye but vitreous opacities—e.g., the dust-like opacities in the vitreous in syphilis. By careful ophthalmoscopic examination in three series of 100 consecutive patients he had found vitreous opacities in about 37 per cent. Few of these patients complained of any symptoms due to them. They were comparatively rare in children. Early cataract was frequently associated—and possibly the causation was the same.

Mr. MACCALLAN said that in a series of 100 cases, all of whom had normal vision with correction, he found vitreous opacities in a much greater percentage than Dr. de Courcy by examination with the slit lamp. In children with enlarged and septic tonsils the vitreous was never clear.

Mr. J. JAMESON EVANS (Birmingham) read a paper on

Blindness in Old Age,

based on some 700 cases examined with reference to their inability "to perform work for which eyesight is essential." This was the Government's definition of blindness. This series included 205 cases of cataract—of which 37 per cent. were certified as operable. There were 43 cases of retinitis pigmentosa. Among the optic atrophy cases 13 per cent. were due to syphilis, 10 per cent. were of cerebral origin, and the rest of unknown origin. There were nine cases due to ophthalmia neonatorum, and nine cases due to sympathetic disease. In myopic cases blindness was due chiefly to choroido-retinal degeneration.

Mr. HARMAN was surprised to hear that cataract headed the list as a cause of blindness in old age in these cases. His impression was that degenerative or inflammatory changes at the macula were the chief cause. 6/60 had been suggested as a definite standard for these cases. He was strongly opposed to any such stringent and rigid definition of blindness for certification for Government regulations. In each case the decision should rest with the ophthalmic surgeon. It must be remembered that they were not asked to certify that the patient could do his own work, but that he could not see to do *any* work for which eyesight was essential. Many domestic workers who had never worked outside their own families were now applying for pensions under these regulations.

Rebiews and Notices of Books.

A SYSTEM OF BACTERIOLOGY IN RELATION TO MEDICINE.

By various authors. Vol. III., pp. 413. By W. BULLOCH, P. FILDES, A. T. GLENNY, H. HENRY, R. T. HEWLETT, R. A. O'BRIEN, S. G. PAINE, G. F. PETRIE, MURIEL ROBERTSON, R. ST. JOHN-BROOKS, W. G. SAVAGE, A. C. THAYSEN, H. G. THORNTON, R. L. VOLLUM. London: H.M. Stationery Office. In 9 volumes. £8 8s. or £1 1s. per volume.

THE Medical Research Council have sponsored many notable contributions to scientific medical literature since the publication in 1915 of the first number in the special report series at the modest price of 3*d*. The familiar green books are to be found in laboratories and libraries all over the world, and include records of investigations which would never have been undertaken except under the auspices of the Council, and could scarcely have been published in any other form. The most ambitious literary project of the Council is the System of Bacteriology of which the first volume (Vol. III.) has just been issued. The system, which is to be published in nine volumes, is the work of some 100 British bacteriologists. The general editorship is in the hands of Dr. Paul Fildes and Prof. J. C. G. Ledingham, and Dr. Fildes has been assisted in the heavy work of organisation and preparation by Dr. Edgar Schuster. Probably few people are in a position to appreciate to the full the amount of work entailed in the editing of a complicated publication of this nature; it must have been immense, and the editors are to be congratulated on the manner in which they have performed their task.

There will be no two opinions as to the need for such a publication as this. There are numerous excellent text-books of medical bacteriology in the English language, but there is no really comprehensive work which takes cognisance of the whole range of bacteriology in its relation to medicine. As Lord Balfour points out in his general preface, the subject of bacteriology is so vast and covers so many fields of human activity that it is impossible for any one man to keep in touch with all its developments. Hitherto it has been difficult for any worker in one field to make himself acquainted with the progress being made in another; the medical bacteriologist, for example, may be profoundly ignorant of the important work being done by his veterinary colleagues or by the agricultural bacteriologist; and even in medical bacteriology specialisation has advanced to such a degree as often to isolate the pioneer. But with this system at his elbow it will be possible for everyone interested in the subject to form some general picture of the whole; and should he desire to go deeper into the matter he will find guidance to the original sources he should consult. Moreover, in a survey of this kind the gaps in our knowledge are likely to become apparent.

Vol. III., the first of the series to be published, deals with Economic Bacteriology, Plague, Anaerobes, and Food Poisoning. In Chapter I. A. C. Thaysen deals with the economic aspects of bacteriology, including baking, retting, decomposition of cellulose, the fermentation of indigo, coffee bean, tobacco, starch, and sugar, the decomposition of nitrogen compounds, and the bacteriological aspects of the formation of minerals, including coal. In Chapter II., H. Henry discusses the bacteriology of water and the examination of water-supplies. Chapter III., by R. L. Vollum, is devoted to the bacteriological aspects of the dairy industry, and in Chapter IV. W. G. Savage deals with other foodstuffs. Soil bacteria are considered in Chapter V. by H. G. Thornton; Chapter VI., Bacterial Diseases of Insects, is in the hands of R. St. John-Brooks, and in Chapter VII., S. G. Paine treats of the bacterial diseases of plants. These seven chapters occupy about a third of the volume; their subject

matter is condensed and, indeed, treated somewhat superficially. Nevertheless they form an interesting and valuable contribution; the authors have shown considerable judgment in determining what to leave out, and the medical bacteriologist will be grateful for this résumé of a subject with which he is rarely familiar. In Chapter VIII., which deals with *Bacillus pestis*, we are on better-known ground. This section is contributed by G. F. Petrie and is preceded by a short historical note by W. Bulloch. After discussing the general bacteriology of *B. pestis*, the author turns to the problems of plague immunity, and then deals with the transmission of the infection by the rat-flea, natural plague in rodents and other animals, and bubonic and pneumonic plague in man. Dr. Petrie has written a very complete and satisfying account of his subject, but it is perhaps a pity that his contribution should have been separated from that dealing with the Pasteurella group, which is to appear in Vol. IV.

Miss Muriel Robertson deals in the next section with the organisms associated with gas gangrene, and as we should expect, gives an admirably clear and lucid summary of this very difficult subject. In a brief historical summary she shows how the complexities which have surrounded this group of organisms have arisen, and then proceeds to describe the more important and definite varieties. Pathogenic action, resistance, and immunity are next discussed, and the chapter closes with a section by R. A. O'Brien on the preparation and testing of toxins and antitoxins, and prophylactic mixtures. A serious omission in this article is the absence of illustrations, and this applies to the rest of the volume, excepting the chapter on soil bacteria which contains 13 charts and figures. Readers of the Council's special report series Nos. 12 and 39, which dealt with the anaerobic organisms, will recall the really beautiful illustrations which enriched these publications and will regret that they are not reproduced here. In Chapter X. Dr. Paul Fildes gives an admirable account of *Bacillus tetani*. Here again the article is conceived on the broadest lines, and much attention is devoted to the pathological effects of the organism, its portals of entry, the mechanism of infection and intoxication, and immunity. The organisms resembling *B. tetani* are briefly discussed, and R. A. O'Brien and A. T. Glenny contribute an account of the production of antitoxin for therapeutic purposes. The chapter is introduced by an historical note by W. Bulloch. Chapter XI., on *Bacillus botulinus*, is by R. Tanner Hewlett, with sections by W. Bulloch and R. A. O'Brien, and the volume ends with a short chapter by W. G. Savage on Bacterial Food Poisoning.

The general subject index is to appear in Vol. IX., and there is no index in this volume, but the table of contents is very full and complete. We have nothing but praise for the general format of the volume. It is dignified and workmanlike, and in every way worthy of what will be a notable publication.

LETTERS FROM ROME.

Letters from Rome on Certain Discoveries Connected with Malaria. By T. EDMONSTON CHARLES, M.D., Q.H.P. With Addenda, consisting of an article by S. CALANDRUCCIO, letters from ROBERT KOCH and A. LAVERAN, and a statement by Lord LISTER. Edited, with Preface and Remarks, by Sir RONALD ROSS, K.C.B., K.C.M.G., F.R.S. London: Ross Institute and Hospital for Tropical Diseases, Putney Heath. 1929. Printed by Harrison and Sons, Ltd. Pp. 78.

DURING the time when Sir Ronald Ross was investigating the connexion between mosquitoes and malaria, certain Italian observers, of whom Prof. Grassi was the leader, were also engaged in the experimental study of the problem. The priority of Sir Ronald Ross's discovery of the zygotes is no longer in doubt, but in order that it shall be finally established he has now published certain letters written to him at the time by Dr. T. Edmonston Charles. The letters cover a period from Nov. 4th, 1898, to Jan. 14th, 1899, and are fully annotated by Sir Ronald Ross, who has also supplied explanatory postscripts. Other confirmatory documents are included in the book, and a list of the published literature immediately connected with the subject is set out in chronological order. Letters from Robert Koch and A. Laveran expressing disapproval of the attitude of the Italian school are also printed together with a statement, quoted from the *Times*, made by Lord Lister. Lister's reminder of the candour, openness of mind, and readiness to recognise the work of others shown by Ross is worth recording for the benefit of future generations, who may see only Ross's own writings, which will survive, but not the attacks to which they provide adequate answers.

THE TOXÆMIAS OF PREGNANCY.

By H. J. STANDER, Associate Professor of Obstetrics, Johns Hopkins University Medical School. London: Baillière, Tindall and Cox. 1929. Pp. 161. 13*s.* 6*d.*

THIS book, forming Volume XV. of the Medical Monograph series, is intended, as are its companion volumes, to provide teachers, clinicians, and laboratory workers with a critical digest of recent views in convenient and readable form. The first 15 pages are occupied with a description of the metabolic and other changes occurring in normal pregnancy, and the remainder of the book with a very full consideration of the toxæmias of pregnancy, amongst which antepartum hæmorrhage is not included. A good discussion of the theories of causation of hyperemesis and of the chemical changes in the blood and urine is included. The author believes that all cases are based on an underlying toxæmia, though in some women the toxæmia may be so obscured by a predominating neurosis that one is almost entitled to make a diagnosis of neurotic vomiting; he has little doubt "that the changed metabolism accompanying pregnancy, which may so easily become perverted, as shown by the tendency towards acetonuria . . . is the underlying cause of all cases of vomiting of pregnancy." The best method so far available to restore the patient to a normal metabolism is said to be insulin and glucose. The value of complete isolation of the patient and of suggestion in these cases is stressed, and also the need for combating dehydration, if necessary by subcutaneous injection. The author proceeds to deal with the "low reserve kidney," a term first introduced by Stander and Peckham. This condition is ascribed to toxæmia, and is associated with a mild degree of hypertension, albuminuria, and œdema; it is difficult to see in what respect it differs from a mild form of the "pregnancy kidney" familiar to us all. The "low reserve kidney" invariably clears up after delivery; it may recur in successive pregnancies, but never in a more severe form or at an earlier period of the pregnancy—in short, permanent kidney damage is never sustained. Prof. Stander gives a helpful and comprehensive review of the various tests of kidney function. He believes that the urea-concentration test, as modified by Rabinowitch, will prove the most useful test in diagnosis and prognosis. He strongly advocates the termination of pregnancy in all cases complicated by chronic nephritis, unless decided and rapid improvement follows rest in bed with restricted low protein diet and plenty of fluid. If there is much œdema a salt-free diet is advocated. Forty pages are devoted to a discussion of the causation of eclampsia. Prof. Stander comments on the increased lactic acid in the blood in eclampsia, and considers the phenomenon of decreased or deficient oxidation "the most fundamental finding yet discovered in eclampsia." In treatment he advocates conservative tactics and describes the modified Stroganoff method now in use at Johns Hopkins. Venesection finds no favour, since high blood pressure may be a protective mechanism leading to increased elimination; but, if used at all, large quantities should be withdrawn (750–1000 c.cm.).

with the object of removing toxins. Radical interference should be practised, preferably under spinal or local anæsthesia, only if, in spite of conservative treatment, the patient becomes progressively worse. It is disappointing to find no reference to the remote prognosis of albuminuria and eclampsia; this should have attention in future editions.

The volume is a concise and reliable statement of the present position of our knowledge of the toxæmias of pregnancy, and deserves to be widely read. A bibliography containing over 700 references to literature is appended.

THE EXPECTANT MOTHER AND HER BABY.

By BODH RAJ CHOPRA, M.B., Ch.B. Edin. Edinburgh: W. Green and Son, Ltd. 1929. Pp. 148. 8*s*. 6*d*.

THIS book is apparently intended for circulation in India. It is divided into two parts which are unequal both in length and in quality. The second and larger part on the care of the child is so good that the defects of the brief section into which advice to the expectant mother is compressed are regrettable. Examples of assertions to which we take exception may be quoted. Under the heading "Mental Discipline," it is stated that "the mind of the parents, both generally and at the time of procreation, and also the subjects constantly heard by the mother during the period of pregnancy, influence the form, the attributes, and even the complexion of the child." We are told that the custom "prevalent among European nations" of spending the honeymoon in "places of natural charm" is designed to make the mother bring forth an "ideal offspring." The method of preparation of the nipples by hardening with eau-de-Cologne and spirits finds little favour amongst obstetricians in this country. Only 24 pages of the book are devoted to advice to the expectant mother regarding the care of her own health, and no counsel is given regarding the importance of such warning symptoms as hæmorrhage in late pregnancy, headache, visual disturbances, scanty urine, or œdema. These are serious omissions. Fourteen pages are devoted to "directions for the attendant" on the conduct of labour and care of the newly born child. This section is elementary, and is evidently intended for women with little training; for these it would be useful enough, although we deprecate the practice, in this country happily becoming extinct, of putting the forefinger into the baby's mouth in order to remove mucus. In the instructions regarding the care of the baby's eyes no mention is made of the prophylactic use of silver nitrate solution. The attendant is advised to bathe the eyes with boracic solution, and when inflammation sets in to send for a doctor.

The greater part of the book is given up to the feeding of the infant, artificial feeding, hygiene of infancy, the normal growth and development of the baby, ailments, and infectious diseases, with a final chapter on the mentally deficient child. This part is exceedingly well written. The advice given is sound and is expressed in concise and simple language. Much of it reflects the teaching of the late John Thomson, of Edinburgh, to whom the author expresses his indebtedness. If in future editions the first part of the book can be brought to the level of the last eight chapters, it should become a popular text-book.

GASES AND LIQUIDS.

By J. S. HALDANE, C.H., M.D., F.R.S., Fellow of New College, Oxford; Director of the Mining Research Laboratory, and Hon. Professor, University of Birmingham. London and Edinburgh: Oliver and Boyd. Pp. 331. 18*s*.

THIS contribution to molecular physics takes the reader into such various fields as the dynamical theory of gases and heat, gaseous diffusion, osmosis, the depression of freezing points of solutions, the internal pressure of liquids, and finally the steam engine and some other heat engines. The book is stimulating since it is the result of individual thought on the part of the author, who is vigorous in denouncing what he holds to be fallacious teaching in the realm of thermodynamics. It is possible that he is unfair to pioneers of the stamp of Clausius, Kelvin, and Clerk Maxwell. Their generalisations may well have been made with the mental reservation that their theories still left many phenomena unexplained.

A TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS.

By HUGH ALISTER MCGUIGAN, Ph.D., M.D., Professor of Pharmacology and Therapeutics, University of Illinois College of Medicine. London and Philadelphia: W. B. Saunders Company, Ltd. Pp. 660. 28*s*.

IF we are to judge from the quotations in the preface of this book Prof. McGuigan has a profound belief in the necessity of the closest alliance between theory and practice, and with that in view he has attempted to correlate the facts of physiology, biochemistry, and pharmacology with clinical application. He has achieved only a fair measure of success, partly perhaps because he has undertaken a difficult and complex task; but mainly, we think, because of the unsystematic arrangement he has adopted in dealing with special pharmacology. The book breaks no new ground. It follows the general plan of most of the standard works on pharmacology and therapeutics, each drug being taken seriatim, its chemical characteristics described, its pharmacological action discussed, and its therapeutic uses mentioned. The information offered, particularly on the pharmacological aspect, is extensive, accurate, and up to date, and the introduction deals in a specially interesting way with the modes of action and the absorption of drugs. A number of excellent diagrams which have been reprinted from the author's well-known work on experimental pharmacology illustrate the seat and nature of action of important drugs. The book contains also a chapter on the pharmacological action of immune serums and notes on the pharmacopœial preparations and prescription writing. It fails only when it is judged on the standard of the author's own high ideals for such a text-book, and is at least as useful an adjunct to clinical work as are most other clear accounts of modern pharmacology.

PHYSIOTHERAPY.

Theory and Clinical Application. Second edition. By HARRY EATON STEWART, M.D., Director of the New Haven School of Physiotherapy. London: Humphrey Milford. Oxford University Press. 1929. Pp. 395. 34*s*.

THIS second edition of Dr. Stewart's book has the same general arrangement as its predecessor. It is divided into two main parts. In the first the author describes the nature, mode of action, and properties of the physical agents used in the treatment of disease. Electrotherapy, phototherapy, ultra-violet ray therapy, hydrotherapy, massage, remedial exercises, and muscle-training are considered in turn. The second part deals with the clinical aspects of physiotherapy. Dr. Stewart recommends the form or forms of physical treatment which are likely to produce benefit in different diseases, and describes the technique of their administration. The book concludes with suggestions for the treatment of miscellaneous maladies, postural defects, and some foot disabilities. The author deals with all forms of physiotherapy (excepting X rays), and as he has had considerable experience he is able to give impartial advice in the selection of appropriate methods. The perplexity of the beginner who has studied different branches of physiotherapy in separate books, and finds overlapping of the therapeutic fields mapped out for each kind of treatment, will thus be solved, and for this reason alone the book can be recommended. But there are other good grounds for reading it. For example, Dr. Stewart is a protagonist of the treatment of lobar pneumonia by

diathermy, and has here summarised his experience in a convincing way.

In the pages dealing with high-frequency currents Dr. Stewart points out that there is risk in subjecting the brain to diathermy. Some patients have suddenly lost consciousness during the treatment without showing any premonitory symptoms. In the chapter on Exercise he speaks with authority of the value of athletics for the adolescent female, for he has been athletic director to secondary school girls and instructor in a normal school of physical education, and, later, physician and head coach to the American team at the first international track and field contest for women held in Paris in 1922. In his view the drastic change that has taken place in the physical life of the American girl during the last two decades has led to no harm and to much good, though he stresses the need for care in preliminary medical examinations and for competent supervision. He states that carefully followed up records of graduates of normal schools of physical training have shown menstrual and maternal histories better than those of the average woman.

Dr. Stewart's book can be confidently recommended to the student and practitioner of physiotherapy. It furnishes the reader with the American point of view of the subject, and at the same time gives adequate reference and credit to the work of European investigators.

THE TREATMENT OF CATARACT AND SOME OTHER COMMON OCULAR AFFECTIONS.

By Lieut.-Colonel HENRY SMITH, C.I.E., B.A., M.D., M.Ch., Indian Medical Service (retired) (London). With the collaboration of Lieut.-Colonel A. E. J. LISTER, F.R.C.S., I.M.S. (retired) (London), Dr. ARNOLD KNAPP (New York), and Dr. J. RUSSELL SMITH (London). Illustrations by Dr. DERRICK T. VAIL, University of Cincinnatti, and Dr. J. RUSSELL SMITH (London). Calcutta: Butterworth and Co. (India), Ltd. Pp. 287. 15*s*. 6*d*.

IN 1910 Lieut.-Colonel Henry Smith wrote a book on the treatment of cataract published by Messrs. Thacker, Spink and Co. We welcomed its appearance, since it enabled us to obtain a clear conception of the author's attitude to the classical method of extraction of cataract, as well as a detailed account of the intracapsular method which has been so successful in his hands and in those of his disciples. Colonel Smith has now entirely rewritten the monograph, which in its present form is published by Messrs. Butterworth and Co. Those ophthalmologists who wish to study the latest improvements devised by the author for his operation will find them described and clearly illustrated by numerous diagrams on pages 102 to 123. Colonel Smith believes that the new technique will put his original method into disuse. He claims, moreover, that the obstacle which in the past "quite rightly prevented the profession in the West from adopting it—that with its more limited opportunities for acquiring the necessary technical skill there was no method at its disposal from which it could hope to obtain success"—is now removed. The operation recommended has been reduced to a simplicity which, its originator believes, should enable it to be performed in relatively unskilled hands, not merely with a lower incidence of loss of vitreous than the capsulotomy operation when in the latter an adequate attempt is made to clear the eye of cortical lens matter, but even without that rupture of the hyaloid membrane which is a result of interfering with an after-cataract.

An interesting note on the historical aspect of the surgical treatment of cataract is included in the book, with a short account of lens couching as performed by the "rawals," a hereditary caste which originally sprang from a group of villages in the Punjab. A final chapter is devoted to the treatment of glaucoma and some other common ocular affections, and contains useful hints.

THE FRENCH MEDICAL ANNUAL, *L'Année Médicale Pratique* (Paris: René Lépine. 1929. Pp. 621), appearing for its eighth year under the skilful editorship of Dr. Camille Lian, is well up to standard. This volume contains an adequate summary of the principal contributions to French medicine during the past year, and gives an interesting idea of the trend of continental opinion. The growing importance of all forms of radiotherapy is obvious in many sections; an able description is given by the editor of the treatment of angina pectoris by this means. The treatment of various forms of anæmia by liver diet or extract receives due notice, and an interesting account of the epidemic of dengue which raged in Athens during the summer of 1928 is included.

JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XXVI. July-September.—Dr. Fergus R. Ferguson and Dr. Macdonald Critchley contribute the first part of a paper, entitled A Clinical Study of Congenital Neurosyphilis, based on the records of cases at the National Hospital, Queen-square, during the last decade. The cases consisted of congenital G.P.I., congenital tabo-paresis, congenital tabes, and a heterogeneous group which included epileptiform convulsions, mental defect, meningitis, hydrocephalus, cranial nerve palsies, paralysis of the extremities, and examples of the so-called nervous child.—In a paper on the Nervous Complications of Whooping-cough, Dr. W. Gordon Sears reviews the literature and records three personal cases. He suggests the following classification: 1 (*a*) Convulsions and coma; (*b*) spasm of the glottis. 2. Paralysis: (*a*) cerebral type; (*b*) spinal type. 3. Meningeal syndrome and meningo-encephalitis. 4. Peripheral neuritis. 5. Mental and other nervous changes, including hysteria, hypochondria, melancholia, epilepsy, and dementia. Sears comes to the conclusion that the primary cause in all these types of nervous complications is toxic, and that a meningo-encephalitis is the primary lesion.—Dr. N. Gray Hill contributes a paper on Herpes and Varicella based on the study of cases of these two diseases at Queen Mary's Hospital for Children, Carshalton, since May, 1926. His conclusions are as follows: 1. Herpes zoster is an infectious disease, and persons suffering from it should be isolated. 2. Herpes zoster may give rise to either varicella or herpes in susceptible persons. 3. The cutaneous lesions of herpes zoster and varicella are very similar. Investigation of the spinal cord should be made to determine whether there is a similarity in the cord lesions of the two diseases. 4. An attack of varicella confers no immunity against herpes zoster. 5. Further investigation is required to determine if an attack of herpes zoster will confer immunity against varicella.—In a paper entitled Tracheotomy and Tuberculosis Dr. J. D. Rolleston shows from a review of the literature and his personal experience that there is no justification for Landouzy's statement that children who have undergone tracheotomy for laryngeal diphtheria are specially susceptible to pulmonary tuberculosis and that very few reach adult life. On the other hand, hoarseness and liability to bronchitis are not infrequent sequelæ of tracheotomy.—In a note on the Nature of the Milroy-Nonne Disease, Dr. F. Parkes Weber shows that Nonne's cases of congenital and hereditary elephantiasis, published in 1891, were of the same nature as the cases of hereditary œdema reported by Milroy in 1892. Although no anatomical or histological study has yet been made, the cause of the condition is probably a lymphatic obstruction of some kind due to an antenatal or postnatal developmental abnormality of lymphatics and connective tissue. In support of this view is the occasional association with the œdema of other congenital defects such as spina bifida occulta, dental abnormalities, and congenital heart disease.—The abstracts from current literature are devoted to nervous and mental diseases.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 28, 1929.

THE TRAINING OF MIDWIVES.

THE report of the Departmental Committee appointed by the Ministry of Health in May of last year to consider the working of the Midwives Acts, 1902–26, will disappoint those who are more immediately concerned with the training of midwives for their practical duties than with the administrative control of their profession, or the adjustment of their place in a national maternity scheme. Less than a quarter of the report is, indeed, concerned with the training of midwives. The study of "conditions under which midwives are employed," which was included in the terms of reference, has proved so attractive that the Committee have made it the occasion for promulgating a scheme for a national maternity service, linked up with the National Health Insurance Acts. The scheme thus launched under official sanction bears a striking resemblance to that recently accepted by the representative meeting of the British Medical Association. We have already commented favourably on that scheme, and need now only record our fear that its proposals will attract public attention to the exclusion of the contributions which this report does in fact make to the difficult and complicated subject of the training of our midwives. This would be the more unfortunate, since the national scheme has allotted to practising midwives a rôle so important and so extensive that the question of their training and education becomes a matter of first importance to the State. The public will expect satisfactory assurances that the average midwife is really competent to discharge the grave responsibilities which will be placed upon her; the report assumes that nine-tenths of the half-million mothers who will come into the national scheme will be attended by midwives alone. The Committee do not express dissatisfaction with the present training of our midwives, or with the general standard of knowledge and efficiency which they attain on certification, though they do point out certain directions in which training could be improved. These are excellent as far as they go, and include (1) an entrance examination in reading, writing, and arithmetic, subjects in which it appears that a considerable proportion of our midwives are rather shaky; (2) a clinical examination before certification; (3) a post-certificate period of three months "hospital" experience, during which personal attendance on "at least five cases"—surely a very small number—is required; (3) post-graduate or "refresher" courses, at intervals, without expense to the practising midwife.

These changes, if they are carried out, will make no fundamental alteration in our present system of training. Under this system we take large numbers of almost uneducated women, who have had no training in general nursing, who are ignorant of the elementary facts of anatomy and physiology, and we attempt, in 12 months, to turn them into efficient midwives, to whose care the lives of our mothers may be entrusted. Where the raw material is sufficiently good, and where an intensive training can be given under the most skilled teachers, the task may be feasible; but only when clinical material is abundant. Unfortunately, however, the amount of clinical material available for teaching is woefully deficient, and in some of the largest institutions medical students and pupil midwives compete with one another for cases. Moreover, a considerable proportion of the cases available for pupil midwives are absorbed by those who do not intend to practise as midwives, but take the training because it is an essential qualification for the post of health visitor. The irony of the situation from the point of view of the midwife is that her work is liable to supervision by these very health visitors, who have never practised midwifery, and have never gained the experience which, under our present system, can only be acquired after training. The Committee suggest no drastic alteration of this system, which they propose to leave practically as it stands. They must be aware that it compares unfavourably with the practice of other European countries which utilise the services of midwives. There are 193 independent "schools" for the training of midwives in England and Wales, varying greatly in size, while nothing approaching a common standard of organisation or efficiency exists among them. Some midwives are accordingly well trained, others badly. No solution is offered in the report to the problem of the supply of clinical material for the pupil midwife. In fact, the needs of the medical student are recognised to be so urgent that the Committee conclude that the training of pupil midwives in hospitals attached to medical schools must suffer some restrictions; they add "students in a medical school area should have preference in the apportionment of material, and . . . . pupil midwives in that area should be allowed to make use of such material only in so far as it is in excess of the needs of medical students." If this recommendation is adopted, as on other grounds we trust it will be, the opportunities for pupil midwives to handle cases in hospitals attached to medical schools will greatly diminish. The fact that "the midwife occupies an exceptionally responsible position . . . . compared with women employed in allied branches of nursing" is admitted by the Committee, who, nevertheless, believe that the time has not yet come either to increase the length of the midwife's special training or to require a preliminary training or experience in general nursing.

It is clear that the opportunities and emoluments at present offered by the profession are not likely to attract highly educated women to its ranks, or to encourage others to undergo a long and arduous period of training to fit themselves for its practice. Moreover, fundamental alterations in an established system cannot be made in a day, but the Committee have missed a great opportunity of pointing out the directions in which the evolution of the midwife's training should be led, and the ideals which should be kept in view. The chief ideal is to provide for the country a body of midwives worthy to form the basis of a national scheme, composed of educated and highly trained women, animated by the esprit de corps of an honourable profession, and adequately remunerated for their work. Only in proportion as some

such ideal as this is attained will a national scheme yield the expected result. One step towards this end would be to give midwives a larger share in the management of their own profession, thus developing their sense of responsibility and of the dignity of their work. The administrative changes proposed in the report tend, however, in the opposite direction. Generally speaking, the changes would place the midwives' profession under the control of medical officers of health and nominees of the Ministry, to the practical exclusion of practising midwives and teachers of obstetrics. The most alarming of the administrative changes proposed are indeed those aimed at the weakening of the Central Midwives Board. The main objections to these proposals are clearly set out in the Memorandum of Reservation, signed by Mrs. BRUCE RICHMOND and Dr. J. S. FAIRBAIRN. We trust that this memorandum will be carefully considered before any decision is taken to limit the scope of a body which has done invaluable public service in the past, and which, if it were made more fully representative and given wider powers, would be in a position to do still more useful work in the future.

DYSENTERY IN GREAT BRITAIN.

DYSENTERY has left a trail of suffering and death all down the ages and still stands supreme as a scourge of armies and camps. A disease which, given suitable circumstances, will so rapidly break out in formidable epidemics, must necessarily have ways of subsisting when times are bad for it—unless we are to believe in spontaneous generation or in gross mutations whereby saprophytes suddenly acquire pathogenic properties together with an array of associated and distinguishing characters. If we follow orthodoxy and disallow such fascinating speculation it follows that the infecting organism must be kept alive in the lean years by a persistence in the carrier state or by a continuous though unobtrusive chain of endemic infections. The evidence for a true carrier state in bacillary dysentery is on the whole negative, and we are left with endemicity as the means by which the causal organism of this disease survives. It is common knowledge that asylums have long been depots of dysenteric infection—a state of affairs which is being coped with successfully by modern energetic measures inspired by a fuller comprehension of the problem. But apart from these, sporadic cases of dysentery and "ulcerative colitis" are far from uncommon in this country and the probability is now almost a certainty that the disease is endemic in many centres; masked, slumbering, and often unheeded, but none the less there. The bacillus survives and only the excellence of our hygienic equipment keeps it under control. In many parts of the Continent, and especially during military manœuvres and in barracks, the disease is a very much more serious menace than it is in Great Britain.

In our last issue (p. 626) we published an article in which Dr. J. A. CHARLES and Dr. S. M. WARREN drew attention to a series of cases of dysentery in Newcastle-upon-Tyne. Their well-documented paper gives a full account of a quasi-epidemic outbreak of this disease in a city where, as Dr. CHARLES has previously shown[1] there is every reason to believe that it has been endemic for a very long time. Evidence of the kind here adduced makes one suspect that where dysentery has passed out of notice the reason is more likely to be found in a change of nosological fashion than in bacillary inactivity. If the writers of this paper may possibly be accused of a little exaggerating the lack of recognition accorded to the disease in this country—where almost every hospital bacteriologist certainly sees some cases in the course of the year—their criticism of current opinion is nevertheless well founded and they must be congratulated upon the thoroughness with which they have studied an unusually large and significant series of cases. These include 141 examples of proved bacillary dysentery observed between March 1928, and the end of June, 1929, most of them occurring in children between the age of two and the earlier years of school life. A considerably larger number of cases were encountered in which there was good reason to suspect bacillary dysentery but in which bacteriological proof was not obtained. Two types of case were met with: a mild form in which the patient recovered, and a fulminant form which proved fatal within 18 to 24 hours. The deaths, ten in all, were all in cases falling into the second of these categories.

The pathology of bacillary dysentery varies with the type of infecting organism and the acuteness of the disease. In fulminating cases in children the condition is pre-eminently an acute toxæmia and the lesions in the intestine are only trivial; in fact the rapidity of the process almost precludes their development. In adults, fatal cases, which are not common in this country, are most often of the Shiga type in which, if the acute phase is survived, death occurs at the end of an exhausting illness, the patient dying with widespread necrosis of the mucosa of the lower bowel, which is sometimes uniformly involved from the ileocæcal valve to the anus. Such infections are, however, comparatively rare and dysentery as now seen in Britain is usually of the milder Flexner, or the more recently described Sonne, types. There is a good deal of rather confusing detail in the descriptions of serological races of dysentery bacilli, but these are the main indigenous types, and they contributed to CHARLES and WARREN'S cases in the proportions of about 4 to 1, with a negligible number of cases due to other types. The Sonne bacillus was found to be somewhat less toxic than the Flexner organism; but the latter, though less virulent for adults than Shiga's bacillus, which is rarely encountered here, may cause a very dangerous infection in children. It is a somewhat curious and unexplained fact that in the series of cases we are considering the mortality was highest not in the very young children, but in boys of 5 to 15 years. In general the mortality was low (7 per cent.) in the proved cases, and this figure no doubt exaggerates the gravity of the infection, since it does not take cognisance of the many mild cases which escaped exact bacteriological diagnosis. It may be worth repeating that all cases other than the fulminating ones recovered: the forms of treatment relied on were salines and serum, and the much discussed bacteriophage was not administered. As regards the fatal cases it is of importance to note that the symptoms of acute fulminating dysentery in the child are sickness, fever, drowsiness, toxæmia, coma, death. The short drama is quickly over and the full intestinal syndrome may never be developed It is well that this should be widely recognised and that the necessity of expert pathological and bacteriological investigation of all cases of dysenteric infection should be emphasised. The organism is amongst us, and it is a duty to the public and to ourselves to keep tally of it as closely as we may, whilst working steadily towards its elimination.

[1] THE LANCET, 1928, ii., 616.

THE CORONER'S AUTHORITY.

HAS a coroner too much power? Some may think so who are accustomed to other forms of judicial tribunal. Two solicitors, attending an inquest lately held at Bournemouth, may have been surprised when the borough coroner refused to allow them to cross-examine witnesses on behalf of parties concerned. The coroner was exercising an indisputable right; he is not only judge but also, so to speak, examining magistrate. He summons such witnesses as he thinks fit and, if he chooses, he can insist on questioning them himself. During the course of the proceedings it may happen to become clear that blame attaches to A or B in respect of the death of X; but A and B have no inherent right to make their defence in the coroner's court; they may even be found guilty of wilful murder on the verdict of the coroner's jury though they have neither been present in court nor been represented by any legal adviser. That is the chief anomaly of the inquest as a judicial tribunal.

The essential element in the proceedings is a dead body, not a specific charge against a named person. The coroner is engaged in collecting and sifting the evidence as a preliminary step to the framing of a charge. Hearsay and gossip are not to be ignored if they help him to reach the facts, nor are the technical rules of evidence to be rigidly followed. His inquiry being of a roving nature, the jury may be invited to range over topics of general interest rather than of strict relevance to the limited issue. Thus at a recent inquest upon the death of a patient in a mental hospital the coroner is reported to have said that it would be for the jury to say whether the hours worked by the hospital staff were not too long. If this meant that the death amounted to manslaughter, caused by the criminal negligence of the hospital management or personnel, it was correctly referred to the jury's arbitrament. If it merely meant that the jury should comment upon the hospital administration, it was one of the vagaries tolerated and encouraged in coroner's courts and in no other judicial tribunals. Anyone who made a collection of the riders attached to the verdicts of coroner's juries would obtain specimens of remarkable range. He would probably also detect similarities in the riders presented to a particular coroner. Sometimes a coroner has views of his own which he does not attempt to hide. Junior barristers, it is believed, when sent to attend an inquest professionally, are occasionally instructed by their more experienced seniors in these idiosyncrasies. The particular topic is respectfully kept in the foreground and the jury adds the appropriate rider.

In view of its autocratic character, the coroner's authority is happy in escaping adverse comment. An independent observer may sometimes be shocked at what he deems the unnecessary publicity and probing into personal affairs in cases of obvious suicide. The legal profession may raise its eyebrows at "coroners' quest law." The general public may wonder whether the inquest should not be brought more closely into line with our other judicial courts. But the inquest is an ancient institution; therefore it is popularly acceptable. The machinery works; therefore time need not be wasted in the invention of a theoretically more perfect process. The statute law was reviewed and amended only three years ago; therefore it is likely to be left untouched for another generation. The ample discretion entrusted to the coroner is not abused by coroners of discretion.

Annotations.

"Ne quid nimis."

NEGLECT OF THE DEAF.

THE National Institute for the Deaf, in its fifth annual report, has endeavoured for the first time in the social history of this country to place before the public in a concise form the full case of the deaf-mute and the deafened. It is evident that the Institute is doing a large amount of valuable work in the face of the severe handicap resulting from lack of interest and support, both from the public and from the Government. Deafness is the most widespread of all sensory disabilities, for the number whom it afflicts in this country probably reaches several millions. It is, therefore, surprising that the total contributions to organisations labouring for the welfare of the deaf and dumb and the deafened over school age should amount only to something under £40,000, while the State stands entirely aloof from such work. In contrast, more than ten times this sum is voluntarily contributed annually for the blind, whose total registered numbers are only some 46,000, while rates and taxes provide a further £600,000. Again, for the blind, the qualification for Old Age Pensions, already reduced to 50 years, will shortly be lowered to 40, but no such consideration is shown to the deaf. At present, education is the only service publicly provided for the deaf, but the Committee of the Institute believes it is certain that the majority of deaf children, despite their far greater need, do not receive an educational opportunity equal to that which is rigidly required for children who can hear. Further, the Committee has recently concluded an inquiry into the industrial position of the deaf and dumb, and has no hesitation in saying that the effects of the large expenditure on education have been, to a great extent, neutralised by the circumstances of post-school life. This is not the result of any lack of effort on the part of the schools or the welfare societies, but is due to the inevitable handicap of deafness in working life, which is increased by modern conditions of industry, by certain legislation affecting wages and insurance schemes, and by the regulations of trade bodies in several industries. As a result, 30 to 50 per cent. of deaf school-leavers remain unemployed. This industrial problem is a pressing one, and it is much to be regretted that the Government in 1928 refused to make any inquiry into the matter. The Institute is raising this question again, and regards it as urgent that an adequate and searching inquiry into the full conditions of the deaf and dumb and the deafened over school age shall be made by the Government in the near future. It is much to be hoped that the Institute will receive the general public support which it deserves.

DIAGNOSIS AND CURE OF G.P.I.

THIRTY years ago general paralysis of the insane was regarded as a definite clinical entity for which there was no cure. It was generally held to be a kind of cerebral exhaustion, due to excessive expenditure of vital energy on "woman and wine." While the diagnosis offered no great difficulty to the experienced alienist, it was made very cautiously, because the outlook was hopeless. The part played by syphilis was subsequently proved beyond reasonable doubt by Noguchi's demonstration of the spirochæte in paralytic brains, and since then the tendency has been to make diagnosis depend on complex laboratory tests for syphilis rather than on observation of the patient's demeanour. The possibility of cure by anti-syphilitic remedies, and recently by induced malarial pyrexia, stimulated efforts at early diagnosis, and thus led to a still greater tendency to diagnose on laboratory findings without waiting for the development of late and unmistakable mental and physical signs. The

Board of Control, having carefully investigated the results of five years of malarial therapy, is satisfied that lengthy remissions, tantamount to cure, have resulted in a goodly proportion of cases, and has definitely pronounced in favour of the method.[1] Malaria is being used more and more, and earlier and earlier; indeed, Dr. G. W. B. James has suggested that it may soon become as essential to do a lumbar puncture, if there is a single sign or symptom suggesting general paralysis, as to take an X ray photograph in a case of injury. But this apparently smooth progress of a new treatment towards universal recognition was interrupted some months ago by a challenge from Dr. John Brander,[2] who roundly questioned the validity of modern diagnosis, and—at the same time—of alleged success in treatment. He believes that serological methods have brought confusion rather than aid to the diagnosis of cerebral syphilis, and that many cases of syphilitic pseudo-paralysis or "insanity with gross brain lesion" are now classed as general paralytics. These, and not cases which would have been so diagnosed by the clinicians of 30 years ago, are the patients who respond to modern therapeutic methods. General paralysis, on the original criteria, is as incurable as ever it was.

To meet this challenge and debate the whole subject the Royal Medico-Psychological Association held a special discussion, and the report of it which has just appeared [3] reveals variety of opinion on almost every point; even the name of the disease is not generally accepted. Dr. Glen Duncan thought that to label any cases "general paralysis of the insane" hampered both psychiatric investigations in general and treatment of individuals, while Dr. James supported Sir James Purves-Stewart's suggestion of the term "progressive syphilitic meningo-encephalitis." The pathology is equally uncertain. While Dr. Nathan Raw's dictum, "no syphilis, no general paralysis" met with general agreement, the theory of the neurotropic stain of spirochæte was not looked upon favourably, Dr. W. A. Caldwell suggesting that the difference in the effects of syphilis depended rather on differences in the soil. Dr. Alexander Walk quoted the French view that ordinary forms of syphilis are allergic, while general paralysis, aortitis, and lingual leucoplakia are anallergic. Dr. B. H. Shaw thought that alcoholism might be the factor which determined whether or not a syphilitic would become a paralytic, while to Dr. F. A. Pickworth the long delay between syphilitic infection and the onset of general paralysis suggested the possible significance of sepsis—e.g., intestinal infection and sphenoidal sinusitis. On the subject of diagnosis there were as many different opinions as there were speakers. Prof. G. M. Robertson thought that no human disease could be diagnosed with such certainty, and based his assurance on a consensus of mental symptoms, physical signs, and laboratory findings. Dr. Hamilton Marr regarded it as a most difficult condition to diagnose, and believed that nine out of ten cases called "general paralysis" during the war were pseudo-paralysis. Prof. J. Shaw Bolton agreed, and pointed out how readily these cases had remitted and how well they had responded to treatment with arsenic and mercury. To some psychiatrists laboratory tests seemed quite unreliable, while others had confidence in some one test, and regarded the remainder with suspicion. Dr. R. M. Stewart had found no one test diagnostic, while Dr. T. S. Good often made his diagnosis on the examination of the cerebro-spinal fluid alone; Dr. Hamilton Marr believed that the colloidal gold test is the most reliable. Dr. Walk did not think there was any tendency nowadays to place too much reliance on laboratory findings; if clinical and laboratory observations could not be correlated, the tendency was to give the clinical side the predominance. Prof. Shaw Bolton laid stress on the existence of a certain degree of confusion of the well-known type as the only reliable mental sign. In the absence of this confusion the prognosis was fairly hopeful, and the disease might remit under any one of several kinds of treatment. Equally varied were the views on treatment. The advocates of malarial therapy pointed to their percentage of remissions. Dr. W. F. Menzies asked whether in the old days, eight successive cases had ever been known to improve, whether treated or not. Dr. B. H. Shaw imagined a history written in A.D. 2500 which dismissed malarial therapy as an amazing and almost incomprehensible obsession. Tryparsamide had its advocates, and in the opinion of Prof. Shaw Bolton had partly justified its claim as a spirochæticide. Between the advocates of malarial treatment there was a difference of opinion on the relative values of the "mosquito" and "blood" methods.

The reader of the report may well agree with Dr. G. Rudolf, as summarised by the President: "that it was impossible to explain the differences in the results obtained by different observers, and that a careful study of the subject made him satisfied that the fallacies were so numerous that nothing definite followed at all." Yet early diagnosis is of the greatest importance if early treatment offers the slightest prospect of cure. As Dr. A. A. Petrie observed, malaria is a dangerous treatment, and its employment is justified only in cases with a very grave prognosis. On the other hand, true general paralysis is such a terrible condition that any alleviating measure ought to be employed at the earliest possible moment. The Royal Medico-Psychological Association has appointed a special subcommittee to consider the treatment of general paralysis, and everyone will hope that this body may be able to reconcile opposing views.

[1] See THE LANCET, August 24th, p. 402.
[2] Ibid., 1929, i., 391.
[3] Published by Adlard and Son, Ltd., 21, Hart-street, W.C. 1929. Pp. 56. 1s.

THE INCIDENCE OF VASCULAR SYPHILIS.

NEW interest has been awakened in the pathology and treatment of syphilis by the important discussion upon this subject at Manchester in July.[1] The main points discussed at that meeting were the effects of syphilis upon the cardiovascular system, and there is no doubt that our knowledge concerning these lesions has greatly altered and increased in recent years. We have thus come to realise that syphilitic aortitis is far more common than was previously suspected, and have learnt to diagnose this condition with greater certainty than was formerly possible. In a review[2] of this subject Dr. Bergel and Dr. Rosenthal of Berlin have summarised modern views on the individual incidence of the various forms of syphilis and upon the all-important question of their curability. Collected statistics which they report from Germany covering approximately 70,000 autopsies show that more than 80 per cent. of the syphilitic patients presented involvement of the vessels, and particularly of the aorta. Most clinicians have noted that aortitis is more frequently present in association with tabes or general paralysis than formerly. Rosenthal as a result of careful investigation has no doubt that both syphilitic aortitis and aneurysm have markedly increased among women as well as among men in recent years. He believes, moreover, that the time interval elapsing between primary infection and the first evidence of aortic involvement has strikingly diminished. The cause for such variations in the character of syphilitic infection is not easy to determine. The suggestion that modern salvarsan treatment has tended to alter the disease in the direction of lessening skin affections and increasing nervous and vascular manifestations is supported by some neurologists, but it is clearly a problem that must depend largely upon the exact nature of the treatment employed, and upon the stage of the disease at which it was begun. The fact that both vascular and nervous lesions are now diagnosed at an earlier stage must also be remembered, though in post-mortem material this consideration does not, of

[1] See THE LANCET, August 17th, p. 330.
[2] Bergel, S., and Rosenthal, O.: Med. Klin., 1929, vol. xxv., Suppl. 6.

course, arise. Prof. Warthin, in his opening paper at the Manchester meeting, stated that latent active lesions are found in the aorta of *every* male syphilitic and in the majority of female syphilitics. Clinically the diagnosis is far less common than this statement would suggest. The Wassermann reaction is not always positive in aortic lesions, nor may the signs and symptoms be at all distinctive. Præcordial pain, not necessarily amounting to angina, discomfort or oppression over the sternum, a systolic murmur with a ringing aortic second sound but without a raised blood pressure, and X ray evidence of aortic dilatation are our best guides to diagnosis. In the presence of aortic regurgitation or actual aneurysm the difficulties are naturally less, and most clinicians would agree that the presence of an aortic aneurysm is more certain evidence of syphilitic infection than is a positive W.R. in the blood.

Such high incidence of vascular lesions suggests a reconsideration yet again of the curability of syphilis, and the results of treatment as far as they are apparent to-day. There is general agreement that aortitis itself cannot be completely cured, and there is unfortunately no evidence that arsenical preparations have in any way reduced its incidence or mortality. Warthin remarks that he has never seen at autopsy a case of perfectly healed syphilis, and that search always reveals active latent lesions in aorta, heart, or other organ. Bergel concludes that syphilis is probably curable only in the first or sero-negative stage, after which true healing is unlikely; and that even with our present methods, though salvarsan is a most potent remedy, actual cure can never be established with any certainty. Even if recovery does take place, Bergel believes that no lasting immunity is conferred and reinfection may thus occasionally occur. It is clear that if this pessimistic attitude is accepted, our sole hope of treatment must lie in early antisyphilitic measures, which must be instituted in the stage of the disease in which the W.R. is still negative. Even at this time, however, a satisfactory percentage of cures can hardly be expected unless at least two full courses of combined arsenobenzol and mercury or bismuth treatment are administered. Such abortive treatment in good hands gives, according to different authors, complete success in between 76 and 100 per cent. of cases, though to a given patient it is never possible to make an absolutely certain reply to his question "am I permanently cured?" Dr. T. E. Osmond, who reviews in this issue the significance of the W.R. at various stages of the disease, states that a case in which treatment is started at the early primary stage will almost invariably continue to give a negative W.R. if the reaction has been negative for a period of one year. Patients beginning treatment at a late primary or a secondary stage may relapse even after giving a negative reaction for two years. It is clear that, as was emphasised by the openers of the discussion at Manchester, the true treatment of cardiac syphilis must be preventive.

NON-OPERATIVE TREATMENT OF SQUINT.

THE main object in the treatment of commencing squint in young children is, of course, to prevent amblyopia in the squinting eye. In the great majority of children Nature provides a safeguard against squint by the development of the impulse to fuse the slightly different images on the two retinæ so as to produce binocular perception. In certain individuals, however, this power of fusion is weak or develops late, and it may even be altogether absent. These are the children who are likely to develop a squint if other factors in the causation of that condition, such as hypermetropia, are present; if the squint is confined to one eye, and is constant, the tendency is for the child to suppress the image formed by the squinting eye. In young children the eye soon becomes amblyopic in the absence of treatment; when the onset of squint is deferred till the child is older the degree of amblyopia is less pronounced, but the longer it has persisted the more difficult it is to overcome. C. A. Worth found[1] that of 193 cases which were brought to him when the duration of the squint was only one-eighth of the life of the patient he was successful in preventing any degree of amblyopia in 165. In cases where the duration had been more than one-eighth but less than one-half of the patient's life, the corresponding cases of complete prevention were 73 out of 188, and in the cases where the patient had squinted for more than half his life the complete cures were only 14 out of 604. Besides occlusion of the non-squinting eye the non-operative treatment of squint consists in the training of binocular vision and of the fusion sense. Hitherto this has generally been attempted by means of stereoscopic views and of the amblyoscope, by means of which the child is encouraged to combine the two images presented separately to the two eyes. In practice, however, it is difficult to keep the child's attention on the pictures, however childish these may be. It is to Dr. E. E. Maddox, the inventor of the "Maddox rod," that we owe a new principle in this sort of treatment. By means of his "cheiroscope"[2] the child's hands, as well as his fellow eye, are made to assist in the development of binocular vision. He can trace the outline of a picture visible to one eye only with a pencil visible to the other eye alone, or he can play a game of catching a butterfly visible to one eye alone with a net held in the hand of the other side and directed by the other eye. Such devices in the hands of properly trained guides are without doubt a great advance on previous methods. In certain cases they may even effect a complete cure of incipient squint and forestall the necessity of an operation. We understand that a new department at the Royal Westminster Ophthalmic Hospital is about to be equipped with the new apparatus, so that it will have every opportunity of an efficient trial.

TONSILLECTOMY AND PULMONARY ABSCESS.

TONSILLECTOMY is so common an operation that serious complications, even if they occur only in a small proportion of cases, may be responsible for a large amount of serious ill-health. Perhaps the most usual complication is some form of pulmonary inflammation, and the way in which this is produced has often been studied and discussed. Of two main schools of thought one maintains that infected material is inhaled at the time of operation, and the other that the pulmonary lesions are caused by the lodgment of emboli from the site of operation in the pulmonary vessels. The former theory is the more widely accepted, and finds further support in an investigation published in America by Harkavy.[3] He begins by pointing out that one of the reasons cited in favour of the embolic theory is that it is hard to produce inflammation in the lungs of experimental animals by introducing septic material into the bronchial tree, and then he goes on to describe his own experiments in this direction. Using dogs in which the recurrent laryngeal nerves had first been divided and which were anæsthetised by intraperitoneal injection, he introduced, through a cannula passed down a bronchoscope into the terminal branches of the bronchi, 0·5 c.cm of mixed cultures of bacteria along with fresh sputum, both derived from patients suffering from pulmonary abscess following tonsillectomy. Five out of 27 dogs so treated developed pulmonary suppuration. The fact that a patient suffers from chronic tonsillitis indicates that he has a low resistance to the particular organism present, and therefore one would expect his lungs to be abnormally vulnerable to infection by such organisms by whatever route they were introduced. The dogs had no such chronic focus of infection from which organisms might be introduced into their

[1] Squint, its Causes, Pathology, and Treatment, 5th edition, 1921.
[2] Made by C. W. Dixey and Son, 19, Old Bond-street, London, W.1.
[3] Harkavy, J.: Arch. Int. Med., 1929, xliii., 767.

lungs, and their resistance might consequently be expected to be higher. This factor may account for the relatively small incidence of suppuration which followed the experiments. Harkavy has certainly shown that it is possible to produce suppuration in the lungs of dogs by direct inoculation with septic material, but it is hard to see how this knowledge will reduce the incidence of pulmonary complications following tonsillectomy. As it is, every possible precaution is taken by surgeons to prevent the inhalation of septic material during these operations, because they are confident, without the reassurance of experiment, that it is a real source of danger.

HOUSING IN THE IRISH FREE STATE.

A CENSUS was taken in the Irish Free State in 1926, and that section of the report which deals with the relation of population to housing was published last week. Accepting as the standard of overcrowding the fact of more than two people living in one room, it appears that in the whole country 781,000 persons, or 27·2 per cent. of the population, live in overcrowded conditions. The comparative percentages for Northern Ireland, Scotland, England, and Wales are respectively 18·1, 43·3, 9·8, and 7·2. The Irish Free State is thus shown to be in a better position than Scotland in this respect, but compares unfavourably with Northern Ireland, England, and Wales. The overcrowding in Ireland is worse in the rural areas than in the smaller towns, and among rural areas the worst are those along the western coast, particularly the counties of Donegal, Mayo, and Kerry. It is noteworthy, however, that this overcrowding in the rural areas does not express itself in a higher death-rate. Mayo, for example, with 41·7 per cent. overcrowding has a lower death-rate than the combined 24 best-housed urban districts with an overcrowding of 15·2 per cent. In urban areas there are other influences deleterious to health which more than counterbalance any advantage that may arise from better housing.

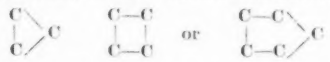
EMBOLECTOMY.

To those who cherish the belief that medical practice is international, at any rate on the surgical side, it must come as a surprise to discover that certain operations are frequently practised in some countries while they remain almost unknown in others. The operation of embolectomy illustrates this point. Were it an exceedingly technical and difficult operation, or were there grave reasons for regarding it as undeserving the serious attention of the practitioner, it would be easy to understand why its employment is geographically so patchy. More than 20 years ago Mr. Sampson Handley attempted the removal of an embolus lodged at the bifurcation of the abdominal aorta, and restored for a time the blood current in the femoral artery. He placed the case on record [1] as "one of those pioneer failures on which ultimate success so often rests." His report led Sir Berkeley Moynihan to mention [2] a case under his care at the Leeds Infirmary four years previously, in which an embolus was removed from the popliteal artery and the artery sutured; the patient, who had mitral disease and granular kidneys, died with extensive infarcts five days later. But this work does not seem to have been followed up, and for the most part it has been Scandinavian surgeons at home or in the United States who have taken the lead in this field of surgery. The names of Häggstrom, Key, Lundberg, and Michaëlsson appear in the literature of the subject, and in the public hospitals of Scandinavia this operation has been increasingly performed during the last ten years, the general practitioners in these countries being sufficiently cognisant of the indications for, and prospects of, embolectomy to send their patients to hospital as soon as the correct diagnosis has been made. In *Minnesota Medicine* for May, 1929, the Norwegian surgeon, F. H. Wiese, publishes a case of embolism of the right brachial artery in a woman, aged 64, suffering from heart disease. She awoke one morning with severe pain in the right arm, which was pale, cold, and paralysed. But she was not medically examined till between 6 and 7 P.M., nor was the operation, under local anæsthesia, started until 10.40 P.M., at least 14 hours after the onset of symptoms. Yet the operation was successful, relieving her of severe pain, restoring movement to the arm, and saving her from the gangrene which would eventually have developed, had the operation not been undertaken. Her death seven weeks after the operation from embolism elsewhere in the body, complicated by a three-day attack of pneumonia, emphasises the fairly common observation that this operation is in a certain sense only a palliative. But even then the operation may be justified, as it relieves pain, saves the patient from the much more serious operation of amputation for gangrene, and restores the use of the limb. Dr. Wiese's paper includes a useful summary of the literature.

[1] Brit. Med. Jour., 1907, ii., 712.
[2] Ibid., p. 826.

THE LATE PROF. W. H. PERKIN.

To many doctors the name of Perkin—especially in association with Kipping—will recall little more than a text-book on organic chemistry, which, in their student days, they were compelled, more or less unwillingly, to study. At that early stage of his career the medical student has little time, inclination, or knowledge to grasp the true significance of organic chemistry, and the important bearing which its methods have upon medicine. As the result of the introduction of the term biochemistry there is a tendency to overlook the fact that, without the preparatory work of the pure organic chemist, many of the outstanding achievements of biochemistry would still be in the realm of unsolved problems. The ability to establish the constitution of a complex carbon compound depends upon the skilful application of the methods of organic chemistry, and no sooner has the constitution of a physiologically important natural product been determined—be it hormone or alkaloid or what not—than attempts are made to synthesise it by those same methods. It is in this field of synthetic organic chemistry that the work of Prof. W. H. Perkin, who died last week, has been of such outstanding value. The son of Sir William Perkin, whose discovery of the first aniline dye from coal tar led to the foundation of the modern dye industry, Prof. Perkin was gifted with great technical skill and an amazing facility in overcoming experimental difficulties. He devoted most of his life to elucidating the constitution of some of the most complicated natural products and accomplished synthesis of many of them. At the beginning of his research career he set himself the problem of synthesising compounds containing three, four, or five membered carbon rings—



the possible existence of which was, at that time, scouted by such great organic chemists as Adolf von Bayer—his teacher, Victor Meyer, and Emil Fischer. In spite of this discouragement, which would have been sufficient to make other people hesitate, he persisted, and succeeded in producing such compounds. It would be impossible in small space to give an adequate account of Perkin's contributions to organic chemistry, but a few of his outstanding researches may be recalled, while he originally studied the synthesis of closed carbon chains for its own sake, the methods thus initiated came to be developed and applied to the synthesis of natural products; amongst these, the colourless precursors of the logwood dyes brazilin and hæmatoxylin claimed his attention, and resulted in his assigning to these substances their probable constitution. It is in the group of alkaloids, however, that in recent years he

has achieved his greatest success; his work on berberine and cryptopine extended over a number of years, and culminated in the establishment of the constitution of both of these compounds, and in the synthesis of cryptopine. Berberine, as its name implies, occurs in the root bark of the barberry, *Berberis vulgaris*, but is fairly widely distributed in the vegetable kingdom, occurring in plants belonging to the natural orders of Papaveraceæ, Ranunculaceæ, and Rutaceæ among others. Cryptopine, on the other hand, is a much rarer alkaloid, being obtained only from opium, where it occurs in the filtrate remaining after the removal of morphine and thebaine. Two other rather uncommon alkaloids, harmaline and harmine, occurring in the seeds of *Peganum harmala*, which have been used in the treatment of malaria, were also investigated by Perkin, and after showing them to be derived from hydroxytryptophane he succeeded in synthesising both of them. In 1910 he proposed a formula for strychnine which was generally accepted, and placed this compound among the derivatives of quinoline; but last year he put forward a modified formula according to which strychnine becomes a derivative of *iso*quinoline. This derivation would, of course, have a profound influence upon the course to be followed in its synthesis—an object which it was Perkin's great ambition to accomplish. Perkin's charm of manner and natural gift for imparting knowledge to others endeared him to all with whom he came into contact. His relations with his colleagues were always cordial, and he was generous in acknowledging the help he received from them. Fortunately for chemistry in this country he has left behind him a number of his former pupils, who are imbued with his spirit and can be relied upon to carry on his work in a worthy manner.

VENEREAL DISEASE ON THE CHINA STATION.

VENEREAL disease is a serious matter for the armed forces of the Powers in China, where it attacks at least three or four times as large a proportion of the men as at home. We know relatively little about what happens among troops other than our own, and a paper [1] by Dr. Cazeneuve, on cases of venereal disease among the French in 1927, is therefore instructive. He gives the percentage prevalence of these cases in the French Squadron in China for several years, and to this we have added the similar figures from the Royal Navy, though it may well be that the methods of enumeration are not precisely the same, and the figures not truly comparable. They are as follows:—

	French Squadron.	British Squadron.	Army at Shanghai.
1900	13·7	18·3	—
1903	12	16·9	—
1907	15·3	18·3	—
1925	12·9	21·2	—
1926	16·7	17·4	—
1927	20·2	13·7	22·3
Number of men in 1927	1551	13,200	8,079

We may add the stated differentiation of cases (not first infections):—

Soft chancre	9·6	3·5	8·9
Gonorrhœa	8·1	8·4	11·6
Syphilis	2·5	1·8	1·6

Dr. Cazeneuve is concerned about the increase in venereal disease which he has observed during his service in China, and ascribes it primarily to the want of employment for men on leave and to the flooding of Chinese ports with prostitutes. Before 1911, he says, the Chinese kept their women away from the foreigner, but since the Revolution and the emancipation of women, excited young students, with "liberty" on their lips, are much in evidence, whilst the uneducated women of the poorer classes have adopted the new manners, and by reason of famine and poverty crowd into the foreign concessions. Japanese women have left China since 1914, but after the late war the Russians began to come down from Siberia, "many with no resources but their good looks"; they have had no one to take thought for them or look after them, and they it is who are the greatest danger to the sailor. Under these conditions venereal diseases themselves have become clinically more serious—a conclusion which Dr. Cazeneuve reaches because: (1) all three infections often result from a single risk; (2) some of the syphilitic cases are very severe; (3) chronic buboes follow 10 per cent. of the soft chancres; and (4) one-third of the hard chancres appear over the site of a soft chancre, suggesting simultaneous double infection. Much is done in the French Navy, he says, to prevent men from risking infection. Newcomers are warned, in classes of ten, that continence is the only true safeguard, and patients are enlisted as lay preachers in the same cause. Each man must take ashore the "nécessaire de poche" or prophylactic packet, but he is warned that these ointments protect less in China, where the disease is very infectious, than in Europe. Of 146 cases more than half professed they had availed themselves of the usual prophylactics, but of 233 who passed through the ablution chamber on board 75 per cent. escaped infection. Dr. Cazeneuve has great hope from the recreation room opened and the welfare work instituted for French sailors at Shanghai, though infections occur, of course, at other ports. Like many others he notes that the people who get themselves into trouble by indiscipline and carelessness on board are just those most liable to contract venereal disease ashore. What he says of the increase of prostitution in China is no doubt true, and when he says that venereal disease is there more severe than formerly he is in agreement with other writers; but it is to be noted that the time of each case under treatment and the proportional occurrence of all diseases but soft chancre have decreased in the Navy in the last four years reported (1924–27). This is probably due to the measures of welfare work he mentions, and to the accommodation of treatment to the local climatic conditions, but obviously it may be partly the result of special distribution of the ships in the various ports about the station, with a lessening of risk, for which no allowance can be made in the general statistics. That the figures are improving nevertheless raises our hopes that the toll taken by these serious diseases will further decrease, especially when medical officers have had time to study Dr. Cazeneuve's careful appreciation of the local situation.

[1] Arch. de Méd. Nav., 1929, cxviii., 43.

THE PHYSIOLOGY OF MILK PRODUCTION.

THE National Institute for Research in Dairying has for its chief aim the creation of a healthy industry, and in its early days the Institute at Reading demonstrated the losses occasioned by faulty milk and the methods to prevent these losses. This work has been of value to the Ministries of Health and of Agriculture, providing the former with the means of establishing standards of cleanliness for milk, and the latter with the basis of an educational campaign. Dairymen are now beginning to recognise that a cleaner milk is worth more money and are paying for it on a quality basis. The farmer is thus reaping the benefits to be derived from a healthy industry and the consumer is getting a sounder food-stuff. The same policy has been adopted towards the problem of milk carrying disease, particularly tuberculosis. The Institute has demonstrated the grave losses caused by bovine tuberculosis and has investigated the means by which it is spread in dairy herds, and the need for the more extended use of the tuberculin test. The steadily increasing number of non-reacting herds throughout Great Britain, and especially within a short radius of the Institute, is gratifying evidence of the influence of this work. The annual report [1] of the Institute for 1928, while it recognises

[1] Which may be obtained from the Secretary of the Institute, Shinfield, near Reading.

all this shows that more is necessary if a complete picture of the reasons for the varying constitution of milk is to be obtained. It has long been known that the proportions of fat and of solids-not-fat in milk of different breeds of cows vary widely, but it has now been shown that the variation is present in the milk of cows of the same breed, even when they are managed under the same conditions. It is probable, too, that the constitution of milk has a profound influence on the type of ripening which takes place in dairy products and may help to explain the differences which are found to occur in the maturing of cheese of the same character in different parts of the country. These considerations led to the study of the detailed constitution of milk, and one of the first discoveries was that in milk fever in cows the calcium balance of the blood is profoundly disturbed and that the administration of calcium has some value. Further work has made it possible to formulate a theory of secretion which will account for the high concentration of calcium in the milk as compared with that found in the blood of the cow. Since then the presence of calcium and its state in milk are of importance alike to the health of cattle and to the manufacture of many dairy products work was continued at the Institute on these lines. By feeding experiments it was shown that the presence of vitamin D increases the percentage of total calcium in milk, and in the laboratory that the relative proportions of diffusible and indiffusible calcium in milk are affected by even moderate heat. The latter observation may be of importance to the industry, since the curdling of milk for cheese is largely dependent on the quantity and state of the calcium which it contains. It may also prove more important to human nutrition than has been suspected hitherto. Many of the observations will hardly be fully explained until a more thorough study has been made of the physiology of milk secretion, and of the influence of the constitution of food-stuffs upon the final composition of milk. The report contains an urgent appeal, supported by many eminent physiologists, for means to set up a department of physiology within the Institute. We wish success to this effort in view of the importance to medicine of the work that is being done there.

TROPICAL FEVERS OF SHORT DURATION.

ALTHOUGH in prolonged infections the ætiological agents, such as the malaria parasite, the relapsing fever spirochæte, and the micro-organisms of undulant fever and the enteric group are readily isolated or identified, it is by no means always possible to ascertain the cause of fevers of shorter duration. The nature of these *febriculæ* varies considerably in different countries and the differential diagnosis is largely determined by geographical distribution. In fevers such as dengue, phlebotomus, and yellow fever, which may be extremely prevalent in a zone of military operations, the ætiological agent has not yet been recognised, so laboratory aids to diagnosis are confined to the more indirect reactions, such as the cytological response in the blood. A reduction in the total number of leucocytes may characterise all three of these infections, though the minor variations in the character, number, size, and shape of the different types of leucocytes may be actually misleading if too much attention is paid to them. A leucocytosis is found in relapsing fever, amœbic hepatitis, influenza, and less commonly in Weil's disease. The latter presents a special problem, for, although the leptospira may be abundant in the blood stream it cannot usually be demonstrated in a stained blood-film preparation, so that recourse must be had to animal inoculation and the reproduction of a disease with the characteristic pathology in the guinea-pig. Considerable assistance in diagnosis may, however, be obtained from microscopical examination of the centrifuged urine when the leptospira may often be demonstrated even in mild transient cases. Albuminuria occurs in Weil's disease as well as in yellow fever, but in the latter it is usually more intense; yet this well-known feature of differential diagnosis may be wanting in transient attacks of yellow fever unaccompanied by jaundice or the well-known stigmata of the disease, which, judging from the work of Hindle and other recent investigators of the yellow fever virus, probably precede and accompany every widespread epidemic. Serological reactions such as the specific agglutination of the organisms of the enteric group may be greatly delayed, especially in paratyphoid fevers, and no clumping of the organisms may be obtainable till convalescence has been well established. This is found usually in paratyphoid A infections, where the titre of agglutination may not be a high one and may appear only a week or more after the symptoms have subsided. In undulant fever of short duration, of which examples rarely occur, a further difficulty may present itself in what is known as the paradoxical reaction, or the zones of no reaction. Here no agglutination is obtained in low dilutions, but only in titres above 1 : 100, so that unless a suitable range of dilutions is made the diagnosis will certainly be missed. In typhus fever, even in mild and transient cases, the Weil-Felix reaction is of great diagnostic value, though the rationale of this reaction is by no means clear. By some it is held that slight degrees of insolation may produce pyrexia, and we believe this to be possible in susceptible individuals and especially in children. A certain proportion of cases, even in the most ideal conditions, will have to be given the depressing and well-worn label "pyrexia of unknown origin," though it might conveniently be replaced by that of "tropical fever of short duration." It was under this heading that the subject was fully discussed at the Fifth International Congress of Military Medicine and Pharmacy held in London last May. The official report of the Congress has now appeared and contains summaries of communications from medical officers from the Mediterranean stations, the French colonies in Africa, Greece, and Japan. Reports were also submitted by representatives of our own Army, Navy, and Air Force. The outcome of the discussions was, as would have been expected, that the correct classification of these fevers of short duration can only be obtained by due appreciation of the limitation of laboratory tests and the intelligent correlation of the laboratory findings with the clinical aspects of the case.

OUR CHANGE OF ADDRESS.

DURING the first 25 years of its life THE LANCET changed its home four times. For over 80 years, however, it has been published from the building at the corner where Bedford-street joins the Strand. The lease of this building having nearly expired, the proprietors of THE LANCET have acquired the freehold of an 18th-century house at No. 7, Adam-street, Adelphi, to which the offices of the journal will be transferred in the middle of next month. The Editor will be At Home on Wednesday, Oct. 16th at the new premises from 9 P.M. Admission will be by personal invitation, which will be sent if application is made to the Manager before Oct. 5th.

LAST week in the presence of representatives of the State of Hesse, a formal presentation of 4½ million marks, the equivalent of £225,000, was made to Nauheim Spa by an unnamed American in gratitude for her treatment there. The sum of 2 million marks is to go to a fund for endowing scientific work, an account of which will be given in an annual lecture of the Institute for which the remaining 2½ million marks is allocated. The Institute will include four sections: (1) for investigating patients sent to Nauheim under the social insurance scheme; (2) for statistical work into the causes of cardiac disease; (3) for social instruction on the causes and prevention of cardiac disease; (4) for experimental pathology and therapy. The Institute will give all the doctors in practice at the spa the opportunity of research, access to the

newest medical literature, and a medical museum as well as a conference hall. The building is to be erected opposite Bath House No. 8, and is to be begun at once. Gratitude could hardly have taken a more beneficent form.

WE regret to announce the death, on Sept. 22nd, after a long illness, of Ernest Edward Glynn, late professor of pathology in the University of Liverpool and honorary pathologist to the Liverpool Royal Infirmary.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XLV.

INTERPRETATION OF THE WASSERMANN REACTION IN ADULTS.

PART II.*—POSITIVE, NEGATIVE, AND DOUBTFUL REACTIONS.

Positive Results.

PROVIDED that a satisfactory technique is employed, and the test carried out by a competent pathologist a positive Wassermann reaction (++ or +) means that the patient is infected with syphilis—recent or remote. The only exception to this rule is "yaws," which also gives a positive W.R. However, since this disease is almost unknown in this country, and very similar to syphilis both in its clinical manifestations and reaction to treatment, whilst the causal organisms are indistinguishable, the exception has little practical significance.

Most text-books give a list, more or less long, of diseases in which the W.R. *may* be positive. Amongst these are included fevers of all kinds, especially typhus, typhoid, and pneumonia; scarlatina, malaria, tuberculosis, Vincent's angina; leprosy, especially the nodular variety; diabetes, nephritis, jaundice, thyroid disease, tumours of various kinds, lead poisoning; various skin diseases, including psoriasis, urticaria, pigmentosa, erythema iris; a number of tropical diseases, including trypanosomiasis, relapsing fever, pellagra, tropical ulcer, and beri-beri. In addition also, positive results have been recorded during pregnancy and general anæsthesia, and in sera from persons in articulo mortis and from cadavers. With the exception of yaws, however, none of these gives a consistently positive W.R. The majority can be excluded either as occurring very rarely in this country or because the differential diagnosis is easy. Scarlet fever has been reported as giving as many as 5 per cent. of positives—but I have personally tested more than 100 in all stages of the disease without obtaining a single positive result. Malaria is said to be particularly likely to give the reaction at the height of the fever; I can only say that this is not my experience, either in this country or in India, though in the latter country I have obtained a number of doubtful reactions when working in very high temperatures where the reagents, particularly the complement, were unsatisfactory and of very low titre. Few diseases have not at some time or other been implicated, but none has stood the test of time; as the technique of the W.R. has been improved so gradually the list has tended to shorten. Where a positive result is obtained and confirmed by retesting in any of the above, it will nearly always be found that syphilis is present as well if a careful investigation is made into the history and clinical side of the case.

Skin diseases are the ones which tend to cause most difficulty because of their resemblance to syphilis; of the three mentioned psoriasis has given a number of border-line reactions in my hands, but I have no special experience of the other two; in most cases there should be little difficulty, because if the lesion is syphilitic the blood will almost certainly show the strongest positive reactions, whereas non-syphilitic lesions are not likely to give more than a very weak positive result. In such cases the therapeutic test may be employed; a few injections of arsenic will nearly always clear up a syphilitic skin lesion; those due to other causes will not be benefited. This procedure should only be adopted in the last resort, and by none but experienced workers. In this connexion it is well to point out that, with the exceptions stated, a positive W.R. means syphilis; but it does *not* mean that all the patient's signs and symptoms are due to syphilis. A syphilitic patient may suffer from other diseases, and failure to afford full recognition of this fact has tended to bring both the W.R. and antisyphilitic remedies into disrepute.

Another possible explanation of a "false" positive result is an error in technique. Even the most careful and experienced pathologist may make a mistake, particularly in so complicated a reaction as the Wassermann. Moreover, confusion of specimens may occasionally occur in the best managed laboratories. J. A. Kolmer[1] states that minute amounts of acid or alkali present in the tubes or pipettes used may be the cause of a false positive, owing to their effect on complement. Over a long series of tests the occurrence of false positives should not exceed 0·2 per cent. Kolmer gives his incidence as less than 0·1 per cent. During the last nine years I have tested an average of 8000 tests annually, and I have found less than one false positive in 800 tests.

For the above and other obvious reasons it is evident that no case should be labelled syphilis on the strength of a single isolated positive W.R. where the history and clinical signs are against such a diagnosis. The test should be repeated—preferably on another specimen—and if still positive should, if possible, be confirmed by one or more of the various flocculation tests, such as the Kahn or Sigma.

Negative Reactions.

A negative reaction—especially an isolated one—does not absolutely exclude syphilis, especially where the history or physical signs point to a diagnosis of this disease. Early syphilis, before antibody has had time to be formed, treated syphilis, and the congenital variety in adults may be expected to give a negative result. Alcohol has been stated by C. F. Craig to convert, temporarily, a positive reaction to negative; but in an experience of nearly 100,000 tests I have never met this. Kolmer states that it is not his experience. Pregnancy is also stated to be the cause of occasional false negative reactions.

Another important point in this connexion is the almost daily variation in the antibody response to syphilitic infection; the fluctuating W.R.—on one occasion positive, and on another negative—is now recognised by most workers. This and other considerations demand that a negative reaction should be obtained on at least two occasions before excluding syphilis. Two or more negative reactions may be expected to exclude *active* syphilis in at least 90 per cent. of cases. Where an unexpected negative reaction is given, a provocative dose of arsenobenzol may be given as described below, and one or more of the flocculation tests carried out.

Doubtful Reactions.

A doubtful or "border-line" reaction, variously recorded as weak positive, weak negative, ±, is not sufficient alone to establish a diagnosis of syphilis, but may usually be taken as an indication for a further investigation of the case, both clinical and pathological. It frequently occurs in the early primary stage—e.g., a few days after the appearance of a primary sore; fortunately it is usually possible to clinch the diagnosis in such a case by finding the

* Part I., on Indications, Methods, and Notation, appeared last week.

[1] Serum Diagnosis by Complement Fixation, Bailliére, Tindall and Cox, 1929.

Tp. pallidum either in the sore or in a neighbouring lymphatic gland. On the other hand, when such a reaction is given by the serum of a syphilitic patient who is having, or has had, treatment it is an indication for further treatment.

Where the diagnosis is in doubt, the test should be repeated, preferably after a "provocative" injection of arsenobenzol—e.g., 0·3–0·45 g. neosalvarsan given intravenously. The blood should be taken for retesting 2, 7, 13, and 21 days later; if only one retest is possible, the seventh day after the injection should be chosen. It is quite common to find that the provocative injection will convert a negative or ± reaction into a frank positive in a case of syphilis. This is probably intimately connected with the well-known Jarisch-Herxheimer reaction (a temporary exacerbation of the symptoms), which is said to be due to the destruction of spirochætes and liberation of their toxins. In any case, and more especially when the patient is under treatment for syphilis, it is well to confirm (or otherwise) a doubtful reaction with one or more of the flocculation tests. These reactions are for the most part more sensitive in treated cases than the W.R.

The following table gives the percentages of positive results found in the various stages of syphilis. It refers only to untreated cases, since the amount of treatment and the time elapsed since it was discontinued will vary, and the results would be of little value unless particulars were given in every case. The figures are the mean of those of a number of workers, including Kolmer, Craig,[2] L. W. Harrison,[3] and others.

—	Days after appearance of sore.	Per cent. positive.	—	Per cent. positive.
Primary S.	5–14	44	Tertiary S.	80–97
	10–14	75	Latent S.	64–80
	21–28	82	Tabes	70–90
	28–42	94	G.P.I.	100
Secondary S.	—	98–100	C.S.S.	60–75

C.S.S. = Cerebro-spinal syphilis.

It is quite clear that in the very early stage of syphilis a large proportion of negative Wassermann reactions is to be expected, but none the less it is important that the reaction should be carried out *in every case* before commencing treatment, because the prognosis is so much better in a Wassermann-negative than in a Wassermann-positive case; it is as well to repeat the test a few days after the first or second injection of arsenobenzol, since these may convert a negative to a positive reaction (provocative effect). A negative W.R. in the presence of active syphilis is not unlikely to occur in pregnant women and in the vascular types of the disease, but in any stage of the disease a negative W.R. may be met with and the reaction should always be repeated in face of evident signs of the disease.

Effect of Treatment.

L. W. Harrison says: "There is no doubt that the Wassermann test, in conjunction with clinical signs, is a far better guide to the immediate effect of treatment than clinical signs alone." In the large majority of cases treatment may be expected to convert a positive W.R. to negative; generally speaking, when the treatment is begun in the early stages of the disease the W.R. usually becomes negative rapidly. Conversely, when the disease has existed for a number of years—e.g., in tertiary syphilis—very prolonged and energetic treatment is usually required. In primary syphilis the W.R. usually disappears in three weeks, and in nearly 90 per cent. of cases in six weeks; in secondary syphilis it is common to find the W.R. negative by the end of the first course (say 12 weeks). In later syphilis much more time and treatment are usually required, depending on a number of factors.

When the reaction has been converted to negative, it is of the utmost importance not to discontinue treatment but to follow up within a few weeks, because it is a common observation that a W.R. which relapses is extremely difficult to convert to negative again. The amount of treatment required must be determined individually for every case, but it is usually found that at least one course of treatment (say ten weekly injections of arsenobenzol and bismuth or mercury) is necessary after the W.R. has become negative. The sooner the W.R. becomes negative the better the ultimate prognosis, but it cannot be too strongly urged that a single negative W.R. must never be accepted as proof of cure of the disease. A ± or doubtful reaction occurring during treatment may usually be regarded as positive—that is to say, it means that more treatment is required; it should never be disregarded.

A Quantitative Test.

In order to observe closely the effect of treatment some form of quantitative test is desirable. Where at the end of a course of treatment the W.R. is reported as still ++ (strongly positive), the clinician is in the dark as to what effect his treatment has had. For this purpose I have in the past tested out a series of dilutions of the patient's serum—e.g., 1/10, 1/15, 1/20, and so on, to 1/100—1/5 being the dilution ordinarily employed. In this way an end-point can always be reached. When a serum is reported as positive at 1/100 before treatment, positive at 1/50 after one course, and positive at 1/20 after a second course (though in each case the routine report would be "strongly positive"), both doctor and patient will be encouraged to continue with treatment. An even more satisfactory way of arriving at the same result is to have recourse to the Sigma test, which records results in units; thus under treatment a case of tertiary syphilis may fall from 20 units to 7·5 in three months, and in six months to 2·5 (1·5 units or more are considered positive for diagnosis, and 1·0 or more for test of cure). A quantitative test is not a necessity, but it is often of value in estimating the effect of treatment and in persuading the patient to persist in a treatment which may be long and irksome.

Effect of Different Drugs.

The drugs which have most effect on the W.R. are arsenobenzol (in its various forms), bismuth, and mercury (given by inunction or injection) in that order. Mercury by the mouth has little if any effect—and I believe the iodides have none. By this I do not mean that mercury or iodide should not be given by the mouth, but that they have no direct effect on the W.R.

Test of Cure.

In order to establish presumptive cure the W.R. should be consistently negative over a period of *at least* two years following cessation of treatment. It is usual to test the blood at the conclusion of treatment, and thereafter every three months during the first year, and six-monthly during the second year. The tests at the end of each year should be preceded by a provocative injection, and the last test should be accompanied by an examination of the cerebro-spinal fluid. Experience has shown that an early primary case which remains negative for a year will almost invariably continue negative. A late primary or a secondary may relapse even after being negative for two years. If a patient has relapsed after a given amount of treatment or has not commenced treatment till a later stage than those mentioned above, no guarantee can be given that the reaction will not return if treatment is suspended for any considerable length of time.

What is of importance is that if a given patient is going to relapse he will usually relapse serologically

[2] Craig, C. F.: The Wassermann Test, Henry Kimpton, 1921.

[3] The Diagnosis and Treatment of Venereal Diseases in General Practice. Third edition. 1926. Oxford University Press.

before he does so clinically. Hence the value of repeated blood tests.

Persistent Positive W.R.

Not infrequently a patient will continue to give a positive W.R. after repeated courses of treatment, and the question arises will it *ever* be possible to convert the W.R. to negative? May not the patient be already cured? It is my firm opinion that a strongly positive W.R. means that *living spirochætes* are lodged somewhere in the patient's tissues. If quantitative tests of some kind are carried out it will usually be found that there is a slow but progressive fall in the strength of the reaction, so that if treatment is persisted in a negative result will generally be obtained in the long run. Kolmer says: "I have seen so many relapses follow the cessation of specific medication among those tired of the 'tyranny' of persistently positive reactions . . . that I believe a very heavy responsibility rests upon any physician . . . who deliberately ignores them in the treatment of the disease." Such patients require continued observation and periodic courses of treatment, even, in some cases, for the remainder of their lives.

The Influence of Pregnancy.

It has often been stated that false positives occur in pregnancy, but this is not my experience. Kolmer states that the opposite holds, and that pregnancy may be the cause of false negatives, and this also applies to the lactation period. A single negative, therefore, should not be trusted. A syphilitic mother with a negative W.R. may produce a syphilitic child.

Congenital syphilis in children has already been dealt with in this series of articles,[4] but it should be pointed out here that the W.R. tends to die out as they grow up, so that adolescents and young adults may show a negative reaction. Kolmer states that in young adults with latent syphilis 40 per cent. of positives may be expected, whilst those with skeletal lesions will give 70 per cent. of positives. He also states that 80 per cent. of the fathers and 60 to 90 per cent. of the mothers of syphilitic children give positive reactions. There can be little doubt that the mother of a syphilitic child is herself nearly always syphilitic, even though she may be apparently healthy. Both parents of a syphilitic child should always have their bloods tested.

Examination of Cerebro-spinal Fluid.[5]

The technique of collecting a specimen is hardly within the scope of this article. Like many other procedures, it is easy for those who are accustomed to do it, but often difficult for the uninitiated. It is not an operation to be undertaken lightly on account of the somewhat severe headache which may follow withdrawal of the fluid; moreover, it is not always convenient for the patient to keep his bed for at least two days as he should. On the other hand it should never be shirked where there are clear indications for its performance.

The special indications for testing the cerebro-spinal fluid are: (1) test of cure; (2) any suspicion of involvement of the central nervous system; (3) a persistently positive W.R. in the blood.

About 5 c.cm. is a convenient quantity to draw off and this should be clear and free from blood. The cerebro-spinal fluid usually contains much less Wassermann-reacting substance than the serum and therefore the W.R. is carried out in rather a different way. Varying amounts of the fluid are tested with fixed amounts of the other reagents, and the results are returned as 4, 3, 2, or 1, plus and negative. Four, three, and two plus are considered definitely positive, one plus as doubtful. It does not seem to be generally known that changes occur in the cerebro-spinal fluid not uncommonly in the early stages of syphilis. C. H. Mills, at Rochester Row, found changes in the fluids of 47 per cent. of secondary cases. It should also be remembered that a patient may have a positive cerebro-spinal fluid with a negative blood. Kolmer gives the following table of incidence in the various stages of syphilis:—

	Positive W.R. per cent. in C.S.F.
Late primary and secondary	30–40
Asymptomatic, early, untreated	30–40
" late, "	80–90
Tabes	96
Paresis	100
Cerebro-spinal syphilis	96–100

It is not suggested that it is necessary or even desirable to examine the cerebro-spinal fluid of every case of early syphilis, but the frequency with which the nervous system is involved is of interest. Under the influence of treatment the early cases quickly show a negative reaction; syphilis of the supporting structures is also fairly amenable to treatment. Tabes often shows considerable weakening of the reaction, but G.P.I. is most intractable except in the most favourable cases under the influence of malaria therapy combined with arsenobenzol.

A positive W.R. in the cerebro-spinal fluid is even more specific than in the serum, though there are often no changes in the fluid in cases of syphilitic arteritis of the cerebral vessels. Moreover, the W.R. is far superior in sensitiveness and specificity to most, if not all of the flocculation reactions.

It is customary to perform three other types of test on the cerebro-spinal fluid, since these help to confirm the W.R.

(1) Estimation of the number of cells, which are usually small lymphocytes. Less than 5 per c.mm. may be considered normal, 5 to 10 doubtful, and more than 10 positive.

(2) *Globulin* cannot be demonstrated in a normal fluid. Excess is commonly present in syphilis of the central nervous system, though it should be pointed out that excess neither of lymphocytes nor of globulin proves that the pathological process is syphilitic.

(3) *Colloidal reactions*, such as the Lange gold-sol, benzoin, and mastic reactions. Various curves are used to record the results of these, the most diagnostic being that attributed to G.P.I., in which there is precipitation of the colloid with the lower dilutions of the fluid, tailing off gradually to none with the higher dilutions. Tabetic and luetic curves are also described.

A negative fluid should be negative to all three of these types of test, as well as to the W.R., since these reactions tend to run parallel, though some react to treatment more readily than others.

Summary.

(1) The Wassermann reaction is highly complicated. Choose a sound technique, a reliable pathologist, and a good laboratory. For purposes of comparing results at various stages in the treatment it is better to keep to the same pathologist and the same technique.

(2) See that the specimen is ample in amount and of good quality.

(3) Give the pathologist all the information which may be helpful and ask for his opinion on the interpretation of the result.

(4) A positive result nearly always means syphilis. If there is a doubt it should be repeated and confirmed.

(5) One negative result does not exclude syphilis; two or more usually do.

(6) Mistrust "weak positives" and "doubtfuls" where the diagnosis is in question.

(7) When treating a case of syphilis have the blood tested frequently—a serological relapse precedes a clinical one.

(8) To establish a cure time is just as important as negative Wassermann reactions.

T. E. OSMOND, M.B. Camb.,
Pathologist, Venereal Diseases Dept., St. Thomas's Hospital, London.

[4] Nabarro, D. N.: THE LANCET, 1929, i., 90.

[5] This subject has been dealt with in detail in this series by Dr. J. G. Greenfield: THE LANCET, 1928, ii., 716.

Special Articles.

THE TRAINING AND EMPLOYMENT OF MIDWIVES.

REPORT OF THE DEPARTMENTAL COMMITTEE OF THE MINISTRY OF HEALTH.[1]

A COMMITTEE was appointed in May, 1928, to consider the working of the Midwives Acts, 1902 to 1926, with special reference to the training of midwives (including its relation to the education of medical students in midwifery), and the conditions under which midwives are employed. The Committee consisted of Sir Robert Bolam (chairman), Dr. J. W. Bone, Dame Janet Campbell, Lady Cynthia Colville, Dr. W. A. Daley, Dr. J. S. Fairbairn, Dr. T. Eustace Hill, Miss Alice Gregory, Mr. A. B. Maclachlan, Dr. F. N. Kay Menzies, Mrs. Bruce Richmond, and Miss Stephenson, with Mr. W. H. Howes, of the Ministry of Health, as secretary. Mrs. E. Barton was subsequently appointed as an additional member.

The Committee have now issued their report, which is divided into five parts. Part I. (four pages) supplies a historical survey of conditions before and after the passing of the first Midwives Act in 1902 and of the constitution and development of the powers of the Central Midwives Board under this Act and successive Acts passed in 1918 and 1926. Part II. (five pages) is entitled Maternal Care. Here the desirability of coöperation between midwife and practitioner is outlined, and administrative and financial arrangements are discussed. Part III. (14 pages) is devoted to the training of midwives—the standard of education, age of entry, the type of pupil, the duration of her training, and the need for post-examination experience. Various suggestions designed to overcome the acknowledged shortage of clinical material are outlined but are not examined in detail. In Part IV. (24 pages) the present conditions of employment of midwives is discussed fully, with proposals for their improvement. Part V. (13 pages) are concerned with administration and recommend changes in the duties and functions of the Central Midwives Board. Part VI. (five pages) deal with miscellaneous questions, such as the payment and recovery of doctors' fees, the practice of uncertified women, maternity nursing, and home helps. In a final paragraph the Committee refer to certain representations which have been brought before them in regard to the administration of anæsthesia in confinements. The plea has been made for more general use of anæsthetics, both in hospitals and in patients' homes. The Committee note that it does not appear to be widely understood that the use of anæsthetics and other drugs is not without danger to mother and child in certain circumstances.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS.

The last 15 pages of the report are filled with a summary of conclusions and recommendations, of which the more important are set out below.

Maternal Care.

Any measures directed solely to the better training of midwives and the improvement in the conditions of their employment would not materially contribute to the reduction in maternal mortality and morbidity, unless they were accompanied by wider measures to deal with this problem on a national basis. A material contribution to this end might be made by initiating a comprehensive maternity scheme related to National Health Insurance whereby, whilst retaining the principle of a cash payment as at present administered by approved societies, the scope of maternity benefit would be expanded to include the provision of essential health services, organised on a local basis and administered in coördination with other services of a similar nature by the local supervising authorities responsible for the supervision of midwives under the Midwives Acts.

The essential services should in part consist of:—

(*a*) The full services of a certified midwife.

(*b*) Provision for a doctor's advice on the call of the midwife in abnormality or doubt.

(*c*) The provision on the doctor's request of the assistance of an obstetric specialist to deal with exceptional emergencies.

(*d*) The provision of administrative and financial arrangements for institutional care in certain cases during pregnancy, and for the confinement in a maternity institution of (1) women whose home conditions are unsuitable, (2) those who by reason of some abnormal condition require institutional treatment, and (3) those who may elect to be confined in an institution, irrespective of their home conditions and the need for specialised institutional care.

There should, as an ideal, be also available examination by the doctor (*a*) early in pregnancy, (*b*) one or two months before the birth is expected, (*c*) six weeks from the date of birth.

The medical practitioner undertaking the supervision of mothers during pregnancy should not only be conversant with modern antenatal work, but have special experience in its methods. Steps should be taken to see that examinations are not perfunctory, and that the data obtained thereby are so registered as to be available throughout the progress of the case. There are undoubted advantages in the doctor responsible for the antenatal supervision being also the doctor who may be on call, or in attendance, during confinement and the puerperal period.

A mother should be at liberty to select the doctor who examines her, and, if she so desires, be assisted to engage a doctor as well as a midwife to attend her during confinement.

There is much to be said for the introduction, in relation to the ten months which comprise the time of pregnancy and lying-in, of a medical general practitioner service comparable to the medical service as at present provided under the National Health Insurance Acts.

The Position of the Midwife Under a Maternity Scheme.

The midwife should give considerably more attention and time to each of her patients than has hitherto been accepted as the usual standard. In order that she should not undertake more work than she can with efficiency perform, it would be necessary (*a*) to limit the number of cases that the midwife (acting alone or as maternity nurse) should be allowed to attend; (*b*) considerably to increase her fees. Subsidies should be granted by local supervising authorities to midwives working in rural areas, who would be unable to earn a reasonable competence even with an increased fee.

Necessitous Cases.

Local authorities would be charged with the duty of providing adequate medical, midwifery, and nursing care for the comparatively few women in necessitous circumstances who would remain outside the ambit of a national maternity scheme.

The formation of local panels of independent midwives for attendance on these necessitous cases would largely obviate the need for the employment of whole-time municipal midwives.

Training of Midwives.

Standard of Education.—There should be a preliminary examination of an elementary kind for women who desire to enter the midwifery profession, exemption being granted to persons who have passed a higher examination and to trained nurses. The preliminary examination should be held in all parts of the country, and should be placed in the hands of local education authorities.

Age of Entry.—A maximum age of entry to the midwifery profession is as important as a minimum age; the minimum age for commencing training should be 20 years and the maximum 40 years.

[1] London, 1929. H.M. Stationery Office. Pp. 96. 1*s*.

The time is not opportune to restrict entrance to the profession to women who hold the general nursing qualification.

Duration of Training.—Since the present periods of training were fixed only in the year 1926, it would be premature to suggest any radical change. If in the future the length of training is increased, arrangements should be made for pupil midwives, other than trained nurses, to obtain more adequate instruction in general nursing.

A *clinical examination* for pupil midwives would be a most valuable addition to the present methods of deciding the suitability of the individual candidate for entrance to the profession.

Post-examination Experience.—The present system of certification should be altered so that in future every pupil midwife would be required after passing the examination to undergo a period of three months post-examination experience under supervision, during which she would be made personally responsible for the conduct of labour in not less than five cases. Thereafter she would be eligible to have her name placed on the Roll of the Central Midwives Board, and be fully licensed for independent practice. The post-examination experience should be undertaken within six months after the passing of the examination.

Midwives whilst obtaining the post-examination experience should be expected to assume the full responsibility appropriate to their calling: this end would best be achieved by making arrangements for them to be appointed as members of the staff of small maternity institutions specially recognised for the purpose, or as assistants to competent and experienced independent midwives specially approved for the same end. The onus of providing suitable openings for post-examination experience would fall on the training schools.

Training in Large Institutions.—There are obvious advantages in pupil midwives being trained in institutions sufficiently large to give a variety of experience and which possess an adequate supply of apparatus. Such an institution should have at least 20 maternity beds, and should provide an adequate number of deliveries on an attached extern district.

Training Material.—It is both undesirable and impracticable to subject pupils who do not intend to practise as midwives to a procedure in relation to training, examination, or certification differing in any way from that imposed upon those who intend subsequently to take up practical midwifery work.

In centres where medical schools are situated a considerable part of the available training material is absorbed by pupil midwives who do not intend to practise after certification, to the detriment of the interests of medical students. It is not merely in the interests of medical education but in the interests of the mothers that the obstetric training of the medical student should be as thorough as possible, and to this end students in a medical school area should have preference in the apportionment of clinical material. Pupil midwives in course of training in connexion with a medical school should be allowed to make use of such material only in so far as it is in excess of the needs of medical students.

A *central clearing house* would collate information as to the vacancies which occur from time to time in the various training schools, and would superintend the work of distributing pupils who were not able to complete the whole of their practical training in connexion with a medical school. It might also advise training schools as to the recognised maternity institutions and approved independent midwives to whom after certification pupils should be sent for their post-examination experience.

Post-certificate training, the present facilities for which are extremely limited, should be encouraged and arranged for midwives at regular intervals by all local supervising authorities, who would bear the cost thereof.

An *examination for non-medical teachers* of midwifery should be instituted, to ascertain the teacher's knowledge of her subject and her capability of imparting it to pupils.

Miscellaneous Training Matters.—Whilst there is no advantage to be gained by teaching medical students and pupil midwives together in relation to the systematic part of their training, the same objection cannot be raised with regard to the clinical part of the training, having regard to the desirability of bringing these two classes into association at the earliest possible moment in order to encourage them to coöperate later on in their career. The practice followed by certain hospitals in allowing medical students to attend district midwifery patients without being accompanied by a properly certified midwife to undertake their nursing work is open to grave objection and should be discouraged. As regards the midwifery training of medical students generally, the recommendations promulgated by the General Medical Council in the year 1923 are based on reasonable and progressive lines, but the different medical schools do not yet fully conform with the recommendations.

There is a lack of adequate facilities for the post-graduate instruction of medical practitioners, and medical schools should take steps to develop, so far as may be practicable, suitable courses to meet what is undoubtedly a real need.

Employment of Midwives.

Supply of Midwives.—Approximately 20 per cent. of the rural population of England is at present unprovided with the services of trained midwives. With the progressive expansion of the work of nursing associations the shortage will to a large extent be overcome, but in certain areas special arrangements will have to be made. The supply of midwives in the county boroughs and other large boroughs is generally excessive, partly because a large number of midwives, not solely dependent upon midwifery work for a livelihood, engage in occasional practice to supplement their incomes. In some boroughs midwives have not been able to establish themselves owing to the persistence of the custom of employing uncertified women.

Disadvantages Attaching to Midwifery Practice.—Midwives who are trained nurses mostly do not practise after certification, because they are generally able to find more attractive and lucrative work. The better trained and better educated women are deterred from becoming practising midwives owing in the main to the heavy individual responsibility and arduous nature of the work, and to the lack of reasonable remuneration normally to be gained.

Independent practising midwives are subject to other disadvantages—e.g., the competition of uncertified women, of certain nursing associations, training institutions, and hospitals and the absence of any definite provision for superannuation or old age.

Methods to Improve Conditions of Employment.—Midwives should be guaranteed security in old age.

Adequate relief during sickness and emergencies and for off-duty times is essential; the local supervising authority should adopt local schemes of relief, the cost of which should, where necessary, be defrayed out of public funds.

The services of whole-time midwives employed in a few instances by a municipality which acts both as the maternity and child welfare authority and as the local supervising authority under the Midwives Acts, might well be utilised in connexion with a scheme of this character.

Aid towards the provision of transport and telephone facilities for midwives practising in rural areas should be provided by each county council concerned.

Housing authorities providing new housing estates might earmark accommodation for midwives who desire to practise in the neighbourhood of such estates.

Reasonable compensation should be paid by the appropriate local authority to a midwife when a patient has been taken out of her charge and sent to a maternity institution for treatment.

General.

Whilst there can be no absolute ban on the administration of sedative drugs by midwives on their own responsibility, because of the occasional emergencies with which any midwife may be faced when the services or advice of a doctor are not available, midwives cannot be regarded as fitted,

either by training or experience, to be given complete freedom in the use of such drugs.

When a midwife has ceased to practise for a considerable period and desires to resume midwifery work, or where a midwife although in practice has attended an insufficient number of cases to remain efficient, the local supervising authority should be empowered to represent these facts to the Central Midwives Board, in order that the Board may determine whether the midwife should be required to undergo post-certificate instruction.

The local supervising authority should have power in cases of this nature to suspend the midwife from practice, pending the promulgation of the Board's decision.

Section E of the rules of the Central Midwives Board, whether or not retained in its position of statutory authority, requires to be revised and rearranged.

Administration.

Supervision of Midwives.—There is a lack of uniformity in the arrangements adopted by local supervising authorities for the supervision of midwives, due to the absence of any standard qualification for inspectors of midwives, and the following changes are desirable :—

Medical Inspectors.—(*a*) Wherever possible, every new appointment to the post of chief inspector of midwives should be given to a medical officer who has had actual experience of obstetric practice and who is engaged on other work of a similar nature—e.g., as an assistant medical officer for maternity and child welfare.

Non-medical Inspectors.—(*b*) Subordinate positions for routine inspections should be filled, when vacancies arise, by midwives who are trained nurses and have had long experience in the actual practice of midwifery. It would be in the interests of midwives if the Minister of Health were given power to prescribe the qualifications that should be held by inspectors of this class.

Midwives should have ready access to the medical inspector. The employment of health visitors with little or no practical experience of midwifery for the inspection of midwives is to be deprecated.

The dual routine inspection of particular midwives who practise in the area of more than one local supervising authority is highly objectionable.

Central Midwives Board.

This Board has dealt with the intricate problems confronting it with good judgment, but certain alterations in its powers and duties are desirable.

The present system of discipline under which midwives are punished for failure to comply with the rules prescribed by the Central Midwives Board, in view of the improved status of the profession, be altered on the lines indicated below :—

(*a*) The Board should be given general power (1) to suspend, or when necessary to erase from the roll the name of any midwife found guilty of a felony, misdemeanour, or offence which, in the Board's opinion, renders her unfit to practise ; and (2) to caution, suspend, or remove from the roll a midwife who, after due inquiry, is judged by the Board to have been guilty of conduct in any professional respect which makes her unfit to pursue her calling, or of a midwife who carries on her work in such a way as to endanger the health or life of the mother or child. (*b*) If the Board were given these powers the existing rules which regulate, supervise, and restrict the practice of midwives could be relegated from their present position of definite statutory authority and penal significance to a less commanding, but still important place. To this end the Board might issue to every midwife practising in England and Wales warning notices or instructions.

It would be an advantage if the Board were to appoint an independent legal assessor whose opinion would be available at penal proceedings.

Power should be conferred on the Board to subpœna witnesses and to require evidence on oath and the production of documents.

Where a local supervising authority represents a prima facie case of negligence, malpractice, or misconduct to the Board, the prosecution of the charge should rest solely with the authority ; it should be competent for any other interested body or individual complainant to bring a case before the Board in the same way. In a residuum of cases the Board must take action on its own initiative.

Existing arrangements for the approval and inspection of training institutions and teachers by the Central Midwives Board are unsatisfactory by reason of their extremely limited scope. The whole of this work should be placed in the hands of the Minister of Health, on whose behalf the majority of the institutions recognised as training schools by the Board are at present inspected by officers of his department, either in connexion with grants in aid of midwifery services or the training of midwives, or as part of the routine inspections of poor-law institutions. An advisory committee, consisting of persons appointed by the Minister of Health on the nomination of representative bodies (including the Central Midwives Board) should be formed to advise the Minister regarding matters coming within the scope of his inspecting and approving duties.

The duty of formulating the course and length of training should also pass from the Central Midwives Board to the Minister of Health.

In order to keep the work connected with the examining of pupil midwives apart, both in personnel and association, from the judicial functions of the Board, an examinations board should be appointed which should be directly answerable to the Central Midwives Board for the conduct of its duties. It would be of great advantage for the advisory committee to the Minister of Health to be represented on the examinations board.

If effect is given to these recommendations the functions of the Board, besides keeping the roll of midwives, would be mainly disciplinary, and it would then be possible and advantageous to constitute the Board with a small compact membership.

Members of the Board might serve for a period of five years and be eligible for re-election or renomination as the case may be.

Provision should be made to secure the payment to members of the Board of a specific fee for attendance at meetings.

Sundry Recommendations.

The scale prescribed for the payment of the *fee of a doctor* called in by a midwife in a case of emergency should be reconsidered by the Minister of Health in consultation with the local supervising authorities and the British Medical Association.

The time limit of two months imposed for the presentation of a doctor's account to the local supervising authority should be extended to three months.

The attempts which have been made by law to prevent the *practice as midwives of uncertified women* have largely failed in their object, and it would seem that the remedy for this abuse can best be found in the application of a State maternity scheme.

It is highly important that the nursing of women during the puerperium should, in general, be carried out by a certified midwife. The practice followed by certain hospitals of training women as maternity nurses is open to objection, and should cease as soon as possible.

The duties of a *home help* should be strictly limited to the ordering and care of the household as usually carried out by the mother herself. Nursing duties do not come within her province.

Use of Anæsthetics in Confinement.—It would be in the public interest if some professional body would take upon itself the responsibility for issuing at an early date some pronouncement as to the advisability and place in labour not only of anæsthetics, but also of analgesic and sedative drugs generally.

Reservations.

Dr. J. S. Fairbairn and Mrs. Bruce Richmond express assent to the report with the exception of certain recommendations concerning the Central Midwives Board. The points in which they dissociate themselves concern those recommendations that involve the splitting up of the functions hitherto assigned to the Midwives Board and their distribution between a reduced Board, the Ministry of Health, and an advisory committee. In their opinion the suggested changes are in no way essential to the midwifery

service outlined in the report, and, if carried into effect, would be detrimental. The reasons which have led Dr. Fairbairn and Mrs. Richmond to make these reservations are set out on pp. 84 to 88 of the report. Their arguments are closely reasoned, and should be consulted. Among the points they make is that no evidence to justify the drastic changes contemplated was put before the committee. The proposal to effect them was submitted by the London County Council at a late stage, and there was no opportunity of testing the suggestions by reference to the bodies most affected by the proposed changes. Dr. Fairbairn and Mrs. Richmond would have welcomed a recommendation that the Central Midwives Board should exercise a wider and more general inspection than it has done, especially if poor-law institutions were included, and would have preferred the employment by the Board to a further degree of obstetric teachers of recognised standing, rather than the institution of a whole-time inspectorate.

"Dual inspection" appears to them to be a bogy that loses its terrors when closely examined. Not only do the reasons set out in the report fail to convince them of any advantage to be gained by the transference of the powers of approval to the Minister of Health, but the experience of the Central Midwives Board has shown that a similar transference in the past proved unsatisfactory and was given up. Training in all poor-law hospitals was removed from the purview of the Midwives Board at an early stage in its history. When the supervision of poor-law institutions was resumed by the Midwives Board in 1924, a large number were struck off the approved list because they were wholly unfitted to be training schools, and fell far short of the standard required of non-poor-law institutions.

In view of the considerable number of municipal and other maternity hospitals under the local health authorities—a number to be vastly increased shortly—and in view of the close relationship of the Ministry to these authorities, Dr. Fairbairn and Mrs. Richmond urge that an outside and independent body like the Midwives Board should have the decision as to their efficiency as training schools. They hold that this proposal to break up work that has been welded into a compact whole, and the distribution of its parts between an attenuated Midwives Board and a department of the Ministry of Health, with an advisory committee at its back, makes a dual control that is not likely to draw women into a profession already groaning under a weight of official supervision.

The midwives should have control over their profession at least equivalent to that exercised by registered nurses over theirs; a gradual increase in the elected representatives should be the aim, so that both, with some outside help from the medical profession and others, may ultimately be able, as other professions are, to determine conditions of training and entry and to maintain their own professional standards.

ROYAL WATERLOO HOSPITAL.—For the convenience of women and girls employed during the day, this hospital for children and women, in Waterloo-road, S.E., will from Oct. 2nd open its out-patient department every Wednesday evening.

BURY INFIRMARY.—Prof. A. H. Burgess, on Sept. 21st, opened an extension of the Bury Infirmary. This year it celebrates its centenary, having been founded in 1829 as a dispensary for the care of the "sick and injured poor." A bequest of about £66,000 from the estate of Colonel John C. Barlow has made extension of buildings and equipment possible. A sum of £30,000 is still required for endowment, and of this £17,000 has already been raised. Besides ordinary beds, 11 private nursing rooms in which patients of limited means can be accommodated and treated have been provided. These rooms are all provided with a light signalling device, which replaces the bell. The charge for these rooms is 5 guineas a week. There is also a ward with 10 beds for maternity cases. The new general ward for women has 22 beds. The extensions have increased the beds from 123 to 170, and a corresponding addition is required for the nursing staff, to be met by a new nurses' home for about 50 nurses.

THE FOSSIL MAN OF PEKING.

BY SIR ARTHUR KEITH, M.D., F.R.S.,
CONSERVATOR OF THE HUNTERIAN MUSEUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

IT is possible that many readers of THE LANCET may be in two minds as to the most recent addition to the Gallery of Ancient Man: is "Peking Man" a genuine antique or is it, as has so often happened before, merely a cobwebbed modern replica?

Thanks to the generosity of Prof. Davidson Black, of Peking Union Medical College, I have had exceptional opportunities not only of following the steps which led to the discovery of Peking Man, but also of examining all the documents relating to his authority, and I can assure my readers that they may take Prof. Davidson Black's announcement at its full face value. Without doubt the portrait just discovered is one of the most valuable ever added to the portrait gallery of our fossil ancestry. It takes a place with four others—Pithecanthropus, discovered in Java; Piltdown Man (Eoanthropus), discovered in England; Heidelberg Man (Palæoanthropus), discovered in Germany; and Rhodesian Man, discovered in Africa. In one sense it is more important than any of those just named, because Peking Man reveals affinities to modern (neanthropic) man more than the others do, and has a better claim than they have to a place on the evolutionary line of descent which has culminated in man of the modern type.

A Genuine Antique.

That we have obtained a "genuine antique" there can be no doubt; the age at which Peking Man lived was fixed before his actual remains were found; the cave deposits in which his bones lay contain an abundance of fossil animal bones; these date the cave strata as early pleistocene, which on the most moderate of reckonings indicate an antiquity of at least a quarter of million years. Of true mankind at this stage of the world's history we had obtained but two glimpses—both in Western Europe. It is true we had a revelation of very ancient humanity in Java, but the early history of man in that vast region of the old world, which stretches from Western Europe to the furthest end of Asia, remained buried in darkness until Prof. Davidson Black made his first announcement in 1927. We now know what sort of beings lived in distant Asia in early pleistocene time. The characters of this ancient fossil form suggest that it is in Asia we are to find the evolutionary cradle of the European type. We have long wondered where the Cromagnons and other neanthropic peoples who invaded Europe and extinguished its Neanderthal natives came from. The Peking discovery points to Asia as the homeland of our palæolithic ancestors.

Let me outline the course of events which led up to the discovery of the Peking Man—Sinanthropus he has been happily named by Prof. Davidson Black. So long ago as 1903, Prof. Max Schlosser described a fossil tooth from Peking; he could not make up his mind whether it was that of a man or of an anthropoid—so blended in it were both sets of characters. This tooth was part of the stock of a Chinese apothecary, and would have, in the ordinary course of events, been ground to form medicine. In China they unwittingly consume the bones of pleistocene ancestors as medicine; in England we sometimes use them as road metal! Prof. Schlosser's publication simply drew attention to China as a possible home of ancient man; nothing more. The next step was taken in 1920. In that year Dr. J. G. Andersson, a Swedish geologist attached to the Government Survey of China, found himself among the hills to the south-west of Peking, and there at a place named Choua Kou Tien—only 25 miles from the capital—he observed an extensive cave deposit rich in animal remains. He wished to discover the nature and age of the contained fauna. An extensive collection of fossil bones was made, and early in 1926 Dr. O. Zdansky,

a German palæontologist, was sent to Sweden with the collection to examine and identify its various fossil items in the laboratory of Prof. Wiman, of Upsala. While so engaged, in the summer of 1926, Dr. Zdansky came across two fossil human teeth—a lower premolar, an upper third (wisdom) molar. When news of Dr. Zdansky's discovery reached Peking, the Geological Survey of China, under an enlightened directorate, and the Peking Union Medical College, under the enthusiastic leadership of Prof. Davidson Black and the financial backing of the Rockefeller Foundation, placed an exploring company in the field early in the summer of 1927. A season's exploration ended on Oct. 16th, by Dr. Burger Bohlin finding, in the matrix of the deposit, a hard travertine rock—the unworn crown of a lower molar tooth—that of a child aged about seven years.

Characters of a New Genus.

That small specimen was all that was found of the ancient cave-dwellers during the first season's exploration. For Prof. Davidson Black it was sufficient. Those who know teeth recognise in them what ordinary men find in a human face—a multiplicity of features which provide sure guidance to racial identification. Prof. Davidson Black found features on this isolated unworn molar which had never before been seen in the molars of men, ancient or modern. Anthropoid and human features were blended; on the strength of this one tooth he created a new genus of humanity, naming it Sinanthropus, the local Peking representative becoming *Sinanthropus pekinensis*.

To those unfamiliar with dental anatomy this precipitate act of christening may seem both audacious and premature. But the anatomist's sagacity was justified by subsequent events. In the summer of 1928 an expedition again took the field, and an arduous season's work was crowned by the discovery of the following fossil parts: (1) Several large fragments of the cranial wall; these proved that Sinanthropus, like Piltdown Man, had already attained a human size of brain—a brain as large as is given to the lower living races of mankind. In the words of Prof. Davidson Black, "Sinanthropus was a large-brained form." (2) Almost the whole of the right body of a lower jaw—all save the part which supports the lower incisors. (3) The greater part of the lower jaw—including the chin region—of a child aged 7 or 8 years. (3) About 24 isolated teeth.

In the Direct Line of Human Descent.

Many of these fossil parts have still to be extracted from the rock-matrix, but enough has been exposed to justify all the inferences drawn by the anatomist from the single molar. In their actual dimensions and in their arrangement in the jaw, the teeth of Sinanthropus are not materially different from those of an Australian aborigine. The total molar length is 34 mm.—an extent often reached in the dental series of living races. The canine teeth are in no wise apelike, as were those of Piltdown Man; as in the Heidelberg jaw, they have sunk to the level of their neighbours. Yet in the molar teeth simian features are apparent; some are also to be seen in the details of structure of the cusps and crown. A minute study of the cusps reveals to my eye certain changes which in their nature are identical with those to be observed in the molar teeth of neanthropic man. In spite of their simian features and individual peculiarities the molars of Sinanthropus make a nearer approach to those of modern man than do the teeth of any of other ancient type.

The bony framework of the lower jaw reveals stages in the passage from an anthropoid to a human form. The simian shelf is disappearing; the first rudiment of the true chin has appeared. We see the separation and differentiation of the two elements of the lower jaw—the alveolar element, which is concerned in the support of the teeth, and the basal bony framework, which supports the alveolar bone and gives attachment to muscles. In the ape the alveolar bone predominates and masks the basal element; in modern man the alveolar element has become reduced, thus exposing the enlarged basal framework on which the shelf of the chin is set. In the crudely fashioned mandible of Sinanthropus we have a transitional stage—one in which basal framework and chin are attaining a separate differentiation. The dental canal of Sinanthropus is altogether remarkable; it is very wide, particularly in front, and its walls are clearly differentiated as in the mandibles of anthropoids and as in that of Piltdown Man. As usually occurs in the lower jaw of anthropoid apes, the mental nerves escape by four foramina.

One Outstanding Feature.

Altogether the characters of Sinanthropus are such as we expect to find in an ancestral stage in the evolution of modern man. Only one feature makes me hesitate in placing him on the line of our ancestry. That is the large size of the pulp cavities of the molar teeth. Sinanthropus shows a considerable degree of that enlargement of the body of the molar teeth and of the contained pulp, known as taurodontism—about the same degree as is seen in the ancestral stage of Neanderthal man revealed by the Heidelberg jaw. Taurodontism reached its climax in the later forms of Neanderthal man. The molar teeth of modern man are not taurodont; they are the opposite; like those of anthropoid apes, they are "cynodont." The bodies of the teeth of modern man are low, and the pulp cavities are shallow. Prof. Davidson Black recognises the taurodont nature of the sinanthropic molars, and inclines to the opinion that taurodontism is a mark of early humanity. I cannot share this opinion; to me taurodontism is a form of dental degeneration. I cannot conceive that once this taurodont change had set in the process could have been reversed and cynodontism regained. Hence my difficulty regarding the position of Sinanthropus in the human family tree. I would place him right in a central position at the base of the branch which has given birth to modern races were it not for this feature of his molar teeth. If he is not to be given a position in the direct line of our descent, we must, to account for such characters as we now know he possessed, at least place him at the pleistocene root of the modern branch, and very nearly on the direct line of neanthropic descent.

The Peking discovery reflects credit on all concerned—on Prof. Davidson Black, Dr. J. G. Andersson, Dr. O. Zdansky, and Dr. B. Bohlin. Especially must we recognise the enlightened enthusiasm which brought to their aid the Geological Survey of China, the Peking Union Medical College, and the Rockefeller Foundation.

DONATIONS AND BEQUESTS.—Mr. J. R. Maclie, Glasgow, left £500 each to the Royal Cancer Hospital, and the Association for the Relief of Incurables in Glasgow and the West of Scotland.—Among other bequests the late Dame Edith Jane Durning-Lawrence left her library ultimately to the University of London and £10,000 to University College, with the request that this bequest should be applied in connexion with the equipment of the Physical and Electrical Chemistry Laboratory at that College, but if such be already completed, then for the endowment fund, of which the income should be used in connexion with research in medical sciences in the said College and its research laboratories; £10,000 to the University of London for the endowment of a professorship or chair at University College for the teaching of medicine according to the principles laid down by Hahnemann, the first occupant of such chair to be Dr. John Weir, if he should be willing to accept such office. If, however, the University does not accept this bequest, it is to revert to the British Homœopathic Association (Incorporated); £10,000 to the Victoria University, Manchester, for a John Benjamin Smith Fund as a memorial of her late father; £10,000 to the University of Liverpool for a Durning-Lawrence Memorial; £8000 to the London Homœopathic Hospital, Great Ormond-street, W.C.; £5000 each to the London Hospital and King Edward's Hospital Fund for London; £4000 to the Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.; £1000 to King Edward VII. Hospital, Windsor; and £200 to the Royal Victoria Nursing Home, South Ascot.

THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS IN 1929.

WE are requested by the Registrar of the General Medical Council to publish the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. Anyone, wherever resident, who finds his or her name included in this list should communicate immediately with the Registrar of the General Medical Council, 44, Hallam-street, Portland-place, London, W. 1, otherwise the name will be omitted from the next issue of the Medical Register. There may be some who have answered while this list is in the press. Those marked "(S)" should communicate direct with the Registrar of the Scottish Branch Council, 12, Queen-street, Edinburgh.

Abdel-Khalik, Ahmed K., M.R.C.S., 1925(E).
Allen, Charles P., M.B., 1925(E).
Armstrong, George R., L.K.Q.C.P., 1876(I).
Ashkenny, Roy F., L.M.S.S.A., 1925(E).
Atkinson-Fleming, Frederick C., *M.C.*, M.B., 1914(I).
Attale, Errol E. E., L.M.S.S.A., 1923(E).
Avetoom, Sarkies T., L.R.C.P.S., 1879(S).

Bailey, William H., L.S.A., 1884(E).
Barclay, Ruth M. C., M.B., 1927(Col).
Begg, Alexander C., *O.B.E.*, M.B., 1901(S).
Bickerton, John M., M.B., 1903(E).
Blackmore, William T. E., M.R.C.S., 1925(E).
Braham, George N., *M.C.*, L.R.C.P.S., 1909(S).
Bogan, James H., L.R.C.S., 1888(I).
Burke, Edmund T., *D.S.O.*, M.B., 1914(S).
Burt, Alida C., M.B., 1921(I).

Casalis de Pury, George A., M.B., 1918(S).
Clark, Walter I. M., M.B., 1906(S).
Coates, Ida, M.B., 1923(E).
Coffey, Thomas, L.R.C.P., 1919(I).
Contractor, Ardeshir K., M.B., 1910(E).
Corry, Matthew, M.B., 1896(S).
Cuthbert, John, L.R.C.S. 1885(I)

Dalal, Anandrai K., *O.B.E.*, M.R.C.S., 1911(E).
Dalal, Kharshedji A., M.B., 1875(S).
Dalzell, John M., L.R.C.P.S., 1912(S).
Danis, James T., M.C.P. & S., 1925(Col).
De Kok, Winifred M., M.R.C.S., 1926(E).
Dempsey, George A., M.B., 1922(I).
Dickinson, Charles M., M.R.C.S., 1905(E).
Dickinson, Thomas E., M.B., 1910(I).
Dimond, John L., M.B., 1900(E).
Duff, Howarth, M.B., 1924(E).
Dunbar, Gladys M. C., M.B., 1908(E).

Early, Edmund P. N. M., M.B., 1926(I).
Edwards, John A., M.R.C.S., 1927(E).
Ekins, Charles M., L.R.C.P., 1900(E).
Eland, Arthur J. C., M.R.C.S., 1923(E).
Ellis, George, L.R.C.P.S., 1892(E).
Enright, Maurice H., L.R.C.P.S., 1896(S).
Enright, Ruby, M.B., 1925(Col).
Evans, Grace O. D., L.R.C.P.S., 1921(S).

Falconar, William E., M.B., 1905(E).
Ferguson, Francis J., M.B., 1922(I).
Fernando, William H., L.M.S., 1921(Col).
Fitzsimons, James, M.B., 1926(Col).
Fleming, Evelyn M., M.C.P. & S., 1926(Col).
Fletcher, Leslie, M.R.C.S., 1893(E).
Ford, John C. C., L.R.C.P., 1899(E).
Forsyth, William D., M.B., 1891(S).
Frend, John A., L.R.C.S., 1877(I).

Ghose, Fokeer C., L.R.C.P.S., 1868(S).
Gibb, Edward A., M.R.C.S., 1918(E).
Gillespie, James, L.A.H., 1906(I).
Gray, Kate, M.B., 1920(E).
Green, Samuel L., M.R.C.S., 1914(E).
Griffith, William R., L.R.C.P.S., 1908(S).
Griffiths, Alfred T., L.R.C.P.S., 1898(S).

Harper, Frank S., M.B., 1897(S).
Higgins, Edward J., L.A.H., 1920(I).
Huxtable, Richard R., M.R.C.S., 1905(E).

Jackson, David, L.R.C.P.S., 1898(I).

Keith, Thomas S., M.R.C.S., 1912(E).
Kennedy, William W., M.R.C.S., 1891(E).

Lambert, John S., M.R.C.S., 1878(E).
Lautre, Max A., M.R.C.S., 1923(E).
Lewtas, Frederick G., M.R.C.S., 1919(E).
Lynch, Eugene G., M.B., 1926(Col).

McCreery, Arthur L., M.B., 1915(I).
McGrigor, Henry J., M.B., 1898(S).
McIvor, William J., M.B., 1905(I).
Maclurkin, Alfred R., M.B., 1900(S).
McMillan, Frederick W., M.B., 1914(S).
McPherson, George, *C.I.E.*, M.B., 1895(S).
Magner, James, L.R.C.P.S., 1916(I).
Massy-Westropp (Mrs.), Gladys (formerly Weatherill), M.B., 1923(I).
Miller, Ralph S., M.B., 1883(S).
Minchin, Edward J., L.R.C.S., 1884(I).
Mitter, Robert K., L.R.C.P.S., 1888(S).
Morton, Frank A., M.B., 1927(Col).
Muhammad Din, Khan, M.B., 1925(Col).
Murphy, Timothy M., M.B., 1922(I).

Nasmyth, Roy D., M.C.P. & S., 1920(Col).
Newton, Henry A., L.R.C.P.S., 1925(S).

O'Kelly, Robert, L.R.C.P., 1907(I).
O'May (Mrs.), Lily S., M.B., 1909(S).

Patchett, Reginald J., L.R.C.P.S., 1918(S).
Patterson, Edward C., M.B., 1921(I).
Paul, William M., L.R.C.P.S., 1899(S).
Pearse, Patrick S., L.R.C.P.S., 1897(S).
Perry, Arnold, M.B., 1925(Col).
Peyton, Thomas H., *D.S.O.*, M.B., 1906(I).
Port, Arthur W., M.B., 1893(E).
Prendergast, D'Arcy J., M.C.P. & S., 1925(Col).
Price, Alfred R., M.B., 1908(S).
Pryce, Daniel M., M.R.C.S., 1926(E).

Radich, John P., M.B., 1927(Col).
Raymond, James, M.R.C.S., 1925(E).
Reece, Charles, M.B., 1904(S).
Rees, Evan R., M.R.C.S., 1927(E).
Rees, Samuel, L.R.C.P.S., 1899(S).
Reeves, Thomas S., L.R.C.P., 1904(I).
Reid, Edmund L., *M.C.*, M.B., 1910(S).
Riad, Mohammed M., M.R.C.S., 1923(E).
Roberts, Frederick E., M.B., 1925(E).
Roberts, Llewellyn W., M.B., 1895(Col).
Roberts, Hugh C., M.R.C.S., 1893(E).
Robinson, John H., L.A.H., 1909(E).
Robinson, Lilian E., M.R.C.S., 1924(E).
Rodger, Nora A. M., M.B., 1923(S).
Ross, William G., M.R.C.S., 1873(E).
Rowland, Frank, L.R.C.P.S., 1899(S).
Rowlands, Annie E. G., M.R.C.S., 1925(E).
Russell, Audrey E., M.R.C.S., 1926(E).
Russell, Edmond F. B., L.R.C.S., 1887(I).
Rustomjee, Maneeksha, L.R.C.P.S., 1925(S).
Ryan, William J., L.R.C.P.S., 1888(S).

Sabri, Ahmed, M.R.C.S., 1914(E).
St. Johnston, Adrian, M.R.C.S., 1914(E).
Segal, Kailash N., M.B., 1927(Col).
Shore, Lewis R., *M.C.*, M.R.C.S., 1913(E).
Simmonds, Francis M., L.S.A., 1898(E).
Simpson, Edwin, L.R.C.P., 1882(I).
Singer, Kildare L., M.R.C.S., 1917(E).
Smart, Thomas W., M.B., 1914(S).
Smith, Gerard H., M.R.C.S., 1876(E).
Smith, John K., M.B., 1914(S).
Smithies, Cyril M., M.B., 1921(E).
Sortain, Edwin L., M.B., 1889(E).
Steel, Henry G., L.M.S.S.A., 1912(E).
Stephen, Leslie D., M.B., 1909(S).
Strachan, Alan, M.B., 1917(S).

Thain, William B., M.B., 1897(E).
Thomas, John G. S., B.M., 1925(E).
Thomas, Rufus C., M.R.C.S., 1915(E).
Thomas, William, L.R.C.P.S., 1893(S).
Tredinnick, Ernest, M.R.C.S., 1876(E).
Trimmer, Francis I., L.S.A., 1902(E).
Trist, George M., M.R.C.S., 1919(E).
Tschessno, Ovsey, M.D., 1927(For).
Tugman, Mary C., M.R.C.S., 1926(E).

Uttley, William W., M.R.C.S., 1909(E).

Vaithialingham, Vethabanam, L.R.C.P.S., 1925(S).
Vatve, Gopal G., L.R.C.P., 1894(E).

Wadham (Mrs.), Elspeth V. D. (formerly Hewatt), M.B., 1925(I).
Wall, Kathleen G., L.R.C.P., 1913(I).
Walshe, Denis, L.R.C.P., 1871(I).
Waters, J. F. W., M.R.C.S., 1897(E).
Watkinson, Arthur A., M.R.C.S., 1917(E).
Watson, Frank H. C., M.B., 1912(S).
Weaver-Bridgeman, Harry M., M.R.C.S., 1891(E).
Whitcombe, Ernest G. R., L.R.C.P.S., 1889(S).
Will, William M., M.B., 1911(S).
Williams, John F., M.B., 1926(Col).
Willis-Bund, Henry D. H., *M.C.*, M.R.C.S., 1906(E).
Wilson, James D., L.R.C.P.S., 1899(S).

Young, Campbell, M.R.C.S., 1916(E).

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. W. P. Hingston is placed on the Retd. List with rank of Surg. Capt.

Surg. Capt. R. W. G. Stewart is placed on the Retd. List.

S. Jenkinson and N. J. U. Mather to be Surg. Lts.

The following appointments are notified: Surg. Lt.-Comdr. (D.) C. Williams to *Pembroke*, for R.N. Barracks, Chatham; Surg. Lts. E. E. Malone and G. A. Miller transferred to Permanent List.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg.-Comdr. T. B. Dixon is appointed Admiralty Surgeon and Agent for Bristol.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. H. B. Fawcus to be Lt.-Gen., and to be Dir.-Gen., Army Med. Services, War Office.

Lt.-Gen. Sir M. H. G. Fell retires on ret. pay.

Maj.-Gen. Sir A. P. Blenkinsop, retd. pay, is apptd. Col. Comdt., vice Maj.-Gen. Sir M. W. O'Keeffe.

Col. W. R. Blackwell to be Maj.-Gen., vice Maj.-Gen. H. B. Fawcus.

Maj. F. C. Atkinson-Fleming is placed on the half-pay list on account of ill-health.

Capt. H. G. P. Armitage to be Maj.

ROYAL AIR FORCE.

Flight Lt. J. Hill is granted a permanent commission in this rank.

Flying Officer G. T. O'Brien is promoted to the rank of Flight Lt.

Squadron Leader J. H. Peck relinquishes his short service commission on account of ill-health and is permitted to retain his rank.

INDIAN MEDICAL SERVICE.

Maj. S. Gordon retires.

Capt. Bodh Raj Chaudhri to be Maj.

Temp. Capt. Bhalchandra Kondopant Phatak and Temp. Lt. Jaswant Singh Anand relinquish their temp. commns.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1928 statistics of six administrative counties :—

Name of district and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Surrey .. .. (841,090)	14·2	10·2	0·66	1·53	1·2	1·7	47	21	4·9
Wiltshire .. (301,200)	15·7	10·8	0·61	1·64	1·1*	2·0	46	—	3·9
Norfolk .. (322,300)	16·4	12·1	0·73	1·76	1·2	2·0	56	17	2·8
Leicestershire (291,800)	17·4	10·5	0·88	1·21	1·2	1·7	55	19	4·7
Northampton-shire (215,170)	14·7	11·6	0·8	1·6	1·4	2·2	48	16	5·6
Holland .. (88,860)	20·6	11·2	0·71	1·56	1·4	1·5	46	19	4·4

* " Other respiratory diseases " not included.
— = Figure not available.

Surrey.

Dr. Andrew Davidson (deputy) presents the report and mentions as a notable feature the opening of the county sanatorium at Milford. On several occasions during 1928 the Surrey tuberculous patients in various hospitals and sanatoriums exceeded 400 in number. The new sanatorium accommodates 300, with two 50-bed pavilions for advanced and four 50-bed pavilions for intermediate and early cases. The site covers 110 acres in healthy open surroundings in the Guildford and Hambledon rural districts about 230 ft. above sea-level with a gentle slope to the south. The sanatorium was opened by the Minister of Health on July 20th, 1928. Over 200 patients were admitted during 1928, and by May, 1929, the institution was full. There were two outbreaks of small-pox—one in January of seven cases and a second in April of 22 cases. In both instances the infection appears to have been introduced by tramps. During the third quarter there was an outbreak of paratyphoid B, chiefly localised in the Epsom neighbourhood. The outbreak was synchronous with that which occurred in Kensington, and the M.O.H. of Carshalton and Epsom considered the probable source of infection was the cream-supply to which the London cases were traced.

The sum paid by the county council to doctors called in by midwives amounted to £1235 16*s.* 9*d.*, of which £335 16*s.* was afterwards recovered from the patients. There were 169 notifications of puerperal fever and pyrexia, and 17 of the patients were admitted to hospital. The county council subsidises various maternity homes to which patients seen at the ante-natal clinics by an assistant county medical officer are admitted. During 1924 54 such patients were admitted, and this number has increased year by year to 219 in 1928. In addition to this the number of expectant mothers visited by the council's health visitors was 974, the total births in the administrative county being 11,911. A scheme for the dental treatment of expectant and nursing mothers will be in full operation in 1929. The children under 5 who received treatment for crippling defects at the five orthopædic centres in the county numbered 239. The number of new V.D. cases from Surrey dealt with under the London scheme was 773, and for the accommodation of patients in the more remote parts of the county V.D. clinics are in existence at Guildford and Redhill, and it is hoped that the clinic at the Royal Hospital, Richmond, will be re-established during 1929.

At the beginning of the year the county council had appointed a chief veterinary officer to deal with milk control and the Diseases of Animals Acts, and in March three full-time assistant veterinary surgeons were appointed. The number of the part-time veterinary staff has been reduced from eight to seven. In 15 instances complaints of tuberculous milk were received from outside sources. In one case the milk, though sent out from a Surrey dairy, was entirely produced in another county. Of the remaining 14 cases, 12 of the infected samples came from one farm, 1 from two farms, and 1 from three farms. In 7 of the 14 cases one or more cows were found suffering from tuberculosis and slaughtered. The veterinary staff carry out a quarterly inspection of the herds, which comprise nearly 15,000 cows in milk. Among the cows in milk they found in 1928 147 suffering from tuberculosis, of which 45 had tuberculosis of the udder.

At the end of 1928 711 blind persons were on the register, of whom 225 were employed and 402 unemployable. The county council augments the wages of blind home workers through the National Institute to the extent of 5*s.* per week, the total sum paid under this heading being £502 0*s.* 10*d.* It is considered that the provision of free wireless licences and the regular supply of Braille and Moon literature and music increases the readiness of blind persons to register under the Act.

Wiltshire.

Dr. Claude E. Tangye mentions that the staff has been strengthened by the appointment in August of Dr. J. B. Lowe as deputy M.O.H., and that his time has largely been occupied with the small-pox outbreak in the Swindon neighbourhood, which still continues (April, 1929). A deficiency in the tuberculosis scheme mentioned in the last report has been met by the appointment of Dr. P. StJ. Wilkinson as tuberculosis officer for the Swindon area, for which he already acts as V.D. medical officer. The county is well provided with isolation hospitals, but with modern ambulance facilities the number of these could be reduced with advantage. In spite of local opposition a ministerial inquiry was held early in 1929 with regard to a new water-supply for Ashton Keynes. The existing wells are polluted and are held responsible for the infection of the school-children by intestinal worms. The water-supply of Long Newnton has apparently caused cases of paratyphoid fever in that parish. A chlorination plant has been installed with satisfactory results, but the rural district council is being urged to provide a satisfactory permanent new supply. The analysts' reports on 34 sewage effluents showed 18 good results, five bad, and the remainder intermediate. Up to March 31st, 1929, financial assistance amounting to £3209 had been promised by the county council in respect of 37 premises under the Housing (Rural Workers) Act, 1926. At the same date £1319 had been paid for work completed at 14 dwellings, and in ten other instances the work was in hand.

The outside complaints of tuberculous milk numbered 15. In three instances the milk was consigned to London in bulk from large collecting depôts in the county, and in view of the large numbers of farms involved complete veterinary inspection was found to be impracticable. The remedy appears to be continuous sampling at the depôts of the produce of individual farms. The following-up of the remaining 12 infected samples resulted in the discovery of tuberculous cows in the case of 10 of the 12 herds inspected. Dr. Tangye expresses doubt as to the value of inspecting herds when the guinea-pigs die from acute infections other than tuberculosis. The work involved is considerable, and it frequently happens that nothing definite is discovered at the farm to account for the deaths of the guinea-pigs.

The county council pay midwifery subsidies to 81 nursing associations, and in two cases subsidies to

individual midwives to enable them to attend cases in isolated parishes. Most of the midwives now possess pelvimeters for antenatal work supplied at reduced price through the county council. The county council paid £793 in midwifery fees to doctors and recovered £306 from the patients. The county orthopædic scheme, based on the Bath Hospital and with five out-clinics, is working successfully, and dealt with 1049 new cases as compared with 873 in the previous year. The scheme is being extended by the institution of remedial exercise classes at the schools in order to provide early corrective treatment for defects of posture. The education committee also has under consideration a comprehensive plan for the occupational training of cripples.

Norfolk.

Dr. T. Ruddock-West, who only took over his duties on June 1st, mentions that before the close of the year he had held conferences with the various district medical officers of health in order to discuss the needs of the county. Isolation hospital accommodation is inadequate, and a central hospital is indicated as the best means of serving unprovided areas. There were 42 cases of small-pox notified with two deaths. Forty-one of the cases occurred in the borough of King's Lynn. The county council is responsible for maternity and child welfare work for the administrative county, with the exception of King's Lynn, Swaffham U.D., and Forehoe R.D., and Dr. Ruddock-West thinks the notification of births should be made direct to the county M.O.H. In 165 of the 690 parishes no provision has yet been made for infant health visiting. There are seven child welfare centres established by the British Red Cross Society, which receive subsidies from the county council. There are, in addition, a number of smaller unsubsidised centres established by voluntary agencies, such as local nursing associations. Antenatal clinics are indicated as one of the needs. Eight outside complaints of tuberculous milk were received and investigated by the (part-time) veterinary officer. As a result six cows were slaughtered under the Tuberculosis Order. As the result of an adverse report by the Fishmongers' Company with regard to Hunstanton mussels marketed in London, samples of mussels, water, and mud were taken on Nov. 30th and examined in the county laboratory. The mussels proved to be 70 per cent. clean, and certain suggestions were made with regard to the discharge of sewage. Further samples of mussels examined by the Fishmongers' Company were found to be clean.

Leicestershire.

Dr. J. A. Fairer says that the total estimated increase of the county population during the last two years—viz., 12,100—is largely due to the migration of city dwellers to houses recently built in the surrounding districts. The recovery of the mining district in the north-west, after the coal stoppage of 1926, is slow and uncertain, and unemployment and distress are reflected in defective nutrition among the children. In the industrial district of the south-west the absence of the mother from her home does not apparently affect the children, and the infant mortality-rate for Hinckley was only 30·5 per 1000 births. Maternity and child welfare work was originated in the county by voluntary societies, and with a view to obtaining better medical supervision Dr. Constance Walters was appointed county medical officer for infant welfare during the year. There are now 39 centres under the administrative control of the council. Antenatal supervision is chiefly carried out by the county health visitors. There are a considerable number of hospitals and clinics at which orthopædic work is done, but up to now it has not been possible to institute a coördinating scheme by which a continuous and accurate record of each child will be kept. The county council has appointed Dr. J. M. Mackintosh to conduct the investigation into maternal deaths required by the Ministry. Dr. E. L. Lilley has repeated his successful series of lectures to the county midwives. The county council subsidises nursing associations for midwifery services in six sparsely populated areas. The midwifery fees paid to doctors totalled £314 2*s.*, of which £175 16*s.* was recovered from the patients.

Dr. Fairer reports a considerable improvement in the condition of nearly all the sewage farms adversely reported upon last year. Grants were made amounting to £1015 in respect of 13 dwellings under the Housing (Rural Workers) Act, 1926. The outside complaints of tuberculous milk numbered 13. As a result 277 cows were inspected, the milk of 33 individual cows was examined bacteriologically, and seven cows were dealt with under the Order. The informal bacteriological examination of milk is apparently improving the standard of cleanliness; thus the percentage of "good" samples during the last three years has been 46·7, 47·1, and 58·8. The plans for the proposed new county sanatorium are nearing completion.

Mild small-pox made its appearance at the close of 1927, and during 1928 there were 25 cases, the last notified on Nov. 24th, with no deaths. There were 18 cases of ophthalmia neonatorum, in two of which vision was impaired.

Northamptonshire.

Dr. L. Meredith Davies records the occurrence of 20 cases of small-pox, chiefly among tramps. There were epidemics of diphtheria in Desborough U.D. and Crick R.D., and the county medical staff gave assistance in both cases in the tracing of contacts and the detection of carriers. A worker in a tannery contracted anthrax. The pustule was excised and he was also treated with Sclavo's serum and made a good recovery. There were 17 notifications of puerperal fever with four deaths. All the cases except one were sent into hospital and a special nurse was provided in one case before removal. There were 30 notifications of puerperal pyrexia, and no request for a special nurse was received for the 23 cases occurring in districts other than Kettering U.D. Four hospitals have been made available for the treatment of women suffering from these diseases. There were 21 notifications of ophthalmia neonatorum, and in one case both eyes were damaged. Arrangements have been made with three hospitals for the admission of both mother and baby and also for the supply of a special nurse. The county council make grants to three isolation hospitals, at Daventry, Kettering, and Oundle. Daventry Hospital has many needs. It has no trained nursing staff, no ambulance, and a very old type of disinfector. Kettering Joint Hospital has just been extended and improved. Oundle Joint Hospital treats so few cases (viz., 15 in 1926, 8 in 1927, and 1 case of small-pox for the first six months of 1928) that Dr. Davies considers its continuance is unjustifiable and that the board should unite with another district.

A scheme for tuberculosis care committees has been approved and will come into operation on April 1st, 1929. There will be one representative central committee and six area committees. Marked benefit is reported from light treatment for suppurating tuberculous glands and less notable benefit in glands without suppuration and lupus. The county council financed the admission of one patient to Papworth Colony. The claims received from medical practitioners called in by midwives numbered 113; the payments made amounted to £167, of which £54 was recovered from patients. Under the heading "Rivers Pollution" Dr. Davies gives extracts from the reports made on the conditions found at many sewage farms. The result may be summarised as "bad" in 24 cases, "good" in 4, and "intermediate" in 14. The investigation of six outside complaints of tuberculous milk resulted in the discovery of one tuberculous cow only. From Feb. 1st for 18 months an inspection of dairy cattle twice in each year by (part-time) veterinary surgeons came into force. As a result 29 tuberculous cows were found, including those with the udder affected. The veterinary surgeons are also appointed sanitary inspectors, and thus empowered to deal with unsatisfactory conditions found on the farms.

Holland.

Dr. H. C. Jennings reports that the work done in the county laboratory has been of great benefit, but would be of much wider service if a trained assistant were appointed. There were 26 cases of small-pox with no deaths. In 12 of the cases in Spalding infection was traced to a tramp. There were 12 notifications of ophthalmia with one case of impaired vision removed from hospital against medical advice. There were 52 deaths from pneumonia, and Dr. Jennings would like to have hospital treatment for all pneumonia cases. Two cases of encephalitis were notified and both died. The tuberculosis mortality was the lowest ever recorded; 355 new cases were reported and 184 contacts were examined. The 30 shelters available in the county were used by 46 patients during the year. More local nursing associations are needed to ensure adequate attention to mothers in childbirth. As it is, the problem of the "handywoman" is an ever-present one. The amount paid in fees to practitioners called in by midwives was £88 18*s.*, of which £9 5*s.* was recovered from patients. The public analyst reports a sample of egg powder as "inferior." It consisted of starchy matter and a small amount of baking powder, and was coloured with an aniline dye. There is, however, no accepted definition or standard for egg powder. Under the Tuberculosis Order 86 animals were slaughtered, four of which were cows in milk with tuberculosis of the udder. Several of the districts in the south of the county have unsatisfactory water-supplies and are in negotiation with the Spalding U.D.C., which own bores at Bourne, from which an ample supply of pure water is obtained. In an appendix on the isolation hospital accommodation of Holland Dr. Jennings indicates that the ideal would be to erect one hospital in a central situation to serve the whole county. Unfortunately, the lack of a piped water-supply in the greater part of the area very much limits the choice of suitable sites.

MENTAL HOSPITAL REPORTS.

THE *Devon Mental Hospital* issues this year its eighty-third annual report, illustrated by two photographs, one of the ballroom and the other of the female private ward, made gay by a veritable herbaceous border of hand-made floral decorations. There were 1333 patients on the register on Dec. 31st, 1928, an increase of 110 during the year, so that on the female side the hospital is now overcrowded and in urgent need of extension. The increase in the admission-rate is largely due to the reception of patients on contract from Staffordshire, Birmingham, and Plymouth. These were chronic cases, yet the recovery-rate for the year reached 37·82 per cent. The death-rate was 7·6 per cent., and autopsies were held in all cases where permission could be obtained—72·34 per cent. The number of cases of pulmonary tuberculosis has been reduced by improved diet, and by ultra-violet ray and sanatorium treatment. In the autumn there were three cases of dysentery, but there has been no typhoid since the routine inoculation of all patients with "TAB" was instituted. The laboratory carried out a large number of routine and special examinations; the dentist visited fortnightly and examined 636 patients, and the visiting ophthalmic surgeon made 76 examinations. The visiting surgeon paid 40 visits, saw 107 cases, and performed 29 major operations. The visiting radiologist made 59 investigations, and 35 patients were treated in the light department. During the year 13 men and 2 women suffering from general paralysis were treated by malaria, 7 by mosquitoes, and 8 by direct inoculation of malarial blood. Three of the patients were sent home, 4 showed no appreciable change, and 4 died. In future, arsenical preparations are to be given as well as malaria, and the results will be compared with those following malarial treatment alone. Parole within the estate was granted to 80 patients; 46 were allowed outside and 55 were taken out by friends. As far as possible the open-door system is adopted. Char-à-banc picnics were enjoyed by 518 patients, and daffodil, primrose, and blackberry-picking parties were organised. The sum of £170 was raised at the annual patients' sports. The method, devised by the engineer, whereby the wireless can be transmitted through the telephone system, continues to work satisfactorily, and there is a portable set for wards not supplied with a telephone. The library has been completely reorganised in a central room, and the weekly illustrated papers are now circulated in folios made in the bookbinding department of the printers' shop. Bookbinding occupies two patients, weaving five, net-making three, and mat-making two. The brush- and basket-making department, served by eight patients, has turned out excellent work, and knitting, rug-making, and raffia occupy some of the women. In all, 271 patients have useful employment. At the out-patient clinic there were 63 attendances, nearly twice as many as in 1927. A new sterilising room was added to the operating theatre, and two new cottages were built for the male nursing staff. One nurse passed the final examination of the General Nursing Council, and 12 nurses and two attendants obtained their R.M.P.A. certificate.

The *Roxburgh, Berwick, and Selkirk District Asylum* had 368 patients, including four voluntary boarders, in residence on May 15th, 1929. The recovery-rate was 35·2 per cent. and the death-rate 7·9 per cent. Cause of death was verified by autopsy in 17 cases. During the year the hospital was fortunate in admitting more recoverable and fewer senile cases than usual. Apart from a sharp epidemic of influenza the health was excellent. The dental surgeons visited every fortnight. An occupational therapy class has been started, and a kinematograph apparatus has been installed. Thirteen members of the staff sat for the R.M.P.A. examination, and all but one were successful.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 14TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 96 (last week, 150); scarlet fever, 2015, diphtheria, 1160; enteric fever, 113; pneumonia, 569; puerperal fever, 50; puerperal pyrexia, 90; cerebro-spinal fever, 13; acute poliomyelitis, 12; acute polio-encephalitis, 3; encephalitis lethargica, 14; continued fever, 1; dysentery, 4; ophthalmia neonatorum, 119. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Sept. 17th–18th was as follows:—Small-pox, 121 under treatment, 15 under observation (last week 156 and 14 respectively); scarlet fever, 1417; diphtheria, 1524; enteric fever, 21; measles, 243; whooping-cough, 209; puerperal fever, 23 (plus 6 babies); encephalitis lethargica, 125; poliomyelitis, 3; "other diseases," 25. At St. Margaret's Hospital there were 22 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (3) from enteric fever, 9 (2) from measles, 2 (0) from scarlet fever, 27 (4) from whooping-cough, 24 (2) from diphtheria, 103 (17) from diarrhœa and enteritis under two years, and 22 (2) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa (which have increased by one-third), 8 were reported from Liverpool, 7 from Gateshead, 6 from South Shields, 5 each from Birmingham, Hull, and Middlesbrough, 4 from Leeds; while Glasgow, Dublin, and Belfast, reported 7, 5, and 5 respectively. Two deaths from measles were reported from Stoke-on-Trent.

The number of stillbirths notified during the week was 265 (corresponding to a rate of 42 per thousand births), including 40 in London.

Correspondence.

"Audi alteram partem."

THE RELATION OF THE TONSILS TO RHEUMATIC CONDITIONS.

To the Editor of THE LANCET.

SIR,—The suggestive paper by Dr. Gray Hill in your issue of Sept. 14th (p. 571) upon the value of tonsillectomy in acute rheumatism, rheumatic carditis, and chorea raises the important question of the true relation between the tonsils and rheumatic conditions, and makes us ask ourselves whether we are not pursuing a chimera, and that it is necessary to pause and reconsider carefully the position. The tabulated cases upon which Dr. Hill's contention is based seem clearly to demonstrate that tonsillectomy, even when efficiently performed, has no influence upon the behaviour of rheumatism and is no safeguard against carditis or chorea, an opinion which supports those of Poynton, Vining, Hunt, Osman, MacSweeney, Boas, Schwartz, and Wilson as against the too enthusiastic assertions of Schichhold, Robey, Freedman, Kerby, Miller, and Thomson.

I think that many practitioners of experience will endorse me when I say that, apart from a certain general improvement that must necessarily accrue from the removal of a definitely septic focus, tonsillectomy has no influence upon the incidence or course of any rheumatic condition, either acute or chronic. This being so, it behoves us to look further afield, and to search for a more likely reason for the undoubtedly frequent concurrence of septic tonsils in rheumatic cases, and one which will also give us more certain indications for treatment. The first suggestion that occurs is that the rheumatic condition is not dependent upon the tonsil sepsis, but that both are in fact the result of a source of infection situated elsewhere.

I personally believe that the most frequent source of rheumatism, septic tonsils and septic teeth, lies in the chronic toxæmia which results from chronic intestinal intoxication. Research should lie in the direction of establishing a possible connexion between rheumatic conditions, or septic tonsils, or both, and the various pathogenic organisms occurring in intestinal toxæmia. Such a connexion would tend to give indications for prophylaxis and rational treatment.

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Wimpole-street, W., Sept. 19th, 1929.

DISPLACEMENT OF THE MANDIBULAR CARTILAGE.

To the Editor of THE LANCET.

SIR,—I have long been interested in the subject of the displacement of the mandibular cartilage discussed by Mr. Wakeley in your columns on Sept. 14th. I had to do with two patients of the late Prof. Annandale who was the first surgeon to treat recurring displacement of this meniscus by operation, as he was the first to operate for "displaced semilunar cartilage" of the knee-joint. A more intimate reason for my interest in this unusual accident was my personal experience of the extreme discomfort it can cause. I found a method by which I could reduce the displacement by manipulation. Ten years ago I contributed to the *British Journal of Surgery* (1919, vi., 385) an article designed (1) to make clear that the description of the meniscus in our anatomical text-books was not a correct one; (2) to indicate by original diagrams what I believed to be the characteristic shape and appearance of this structure; (3) to describe the sensations and symptoms which result from a recent displacement and how I conceived them to be brought about, as well as to describe my method of reduction by manipulation; (4) to record a case of constantly recurring displacement which I treated in 1911 by excising the meniscus. Mr. Wakeley's account of the condition does not appear to differ in any particular respect from my own, and it is gratifying to observe that the method which he describes as being "the best method of reduction" is that recommended by me. It is unusual to find one's statements on a subject in surgery so completely corroborated in every detail as mine have been by Mr. Wakeley without a reference to the original descriptions, especially when an accident is uncommon and has received scanty attention in the literature. However, since THE LANCET is extensively read by practitioners who may not see the more specialised journals regularly, it is all to the good that attention should be called to the condition in your columns.—I am, Sir, yours faithfully,

J. HOGARTH PRINGLE.

Peebles, Scotland, Sept. 16th, 1929.

RADIOGRAPHIC EXAMINATION OF THE LUNGS.

To the Editor of THE LANCET.

SIR,—On X ray examination of the lungs the bases are obscured by the domes of the diaphragm and abdominal contents. In cases of left-sided disease we give some sodium bicarbonate before the examination, in order that there may be gas in the stomach to render the bases of the lung more visible. The radiogram here reproduced shows a patient with left basal bronchiectasis and lipiodol in the dilated bronchi. It will be seen how clearly the condition shows up against the air bubble in the stomach.

Radiogram showing left basal bronchiectasis.

We are, Sir, yours faithfully,

L. S. T. BURRELL,
STANLEY MELVILLE.

Chandos-street, W., Sept. 16th, 1929.

THE AGE OF MARRIAGE AND OF CONSENT.

To the Editor of THE LANCET.

SIR,—In your leading article last week (p. 618) reference is made to the Hindu custom of early marriage. Therein is quoted a statement by Dr. Margaret Balfour and Dr. Ruth Young to the effect that this custom amongst the Hindus is founded on the principle that early marriage is likely to lead to chastity in the youth of both sexes. This statement appears to be of the nature of an *argumentum a*

posteriori, and does not seem to be very convincing, or at least is true only to a very limited extent. Is not the explanation which the Hindus themselves put forward more reasonable and more in accordance with experience—namely, that the Muslim conquerors of India took the unmarried girls only into their harems? It thus became a question of national existence and national honour that to save the girls from this abduction they should be married at an early age. In order to bring about the general acceptance of this practice religious sanction was invoked from the ancient Sanskrit texts. It is to be remembered that early marriage was already a Muslim custom. I am, Sir, yours faithfully,

Birmingham, Sept. 23rd, 1929. G. A. AUDEN.

*** Since our article appeared the Child Marriage Bill, which provides that the age of girls at marriage shall not be less than 14 years and the age of consent not less than 16 years, has passed the Indian Legislative Assembly.—ED. L.

THE STABILISATION OF "VITA" GLASS.

To the Editor of THE LANCET.

SIR,—In an annotation entitled Special Glass in School Windows in your issue of August 24th (p. 398) it is implied that "Vita" glass tends to lose its special penetrability with time. I shall be much obliged if you will allow me to correct the erroneous impression thus conveyed. When "Vita" glass is exposed to the sun it undergoes a change, which consists of a slight diminution of the transparency to the sun's rays of the shortest wave lengths. This physical change does not in any way affect the appearance of the glass and is almost invariably complete within nine months, and often within a shorter period, after glazing. This period is called the period of stabilisation, and at the end of it no further change in transmission will take place.

The effect of stabilisation is shown by the following figures which give percentage transmission of a typical piece of "Vita" glass of 2 mm. thickness at wave length 3130 A.U.

	3130 A.U.
New "Vita" glass	72 per cent.
Stabilised "Vita" glass	64 „

The reading at 3130 A.U. is taken because this is approximately the wave length where the maximum therapeutic strength of sunlight lies, as found by Dorno. At this wave length there is a very strong line in the spectrum from a mercury-vapour lamp, enabling the determinations of percentage transmission through the glass to be done with great accuracy.

When this state of stabilisation is reached "Vita" glass still transmits to the limit of the sun's spectrum as is shown by the accompanying spectrographs made with:

(*a*) Mercury-vapour lamp unscreened.

(*b*) The same lamp screened by fully stabilised "Vita" glass.

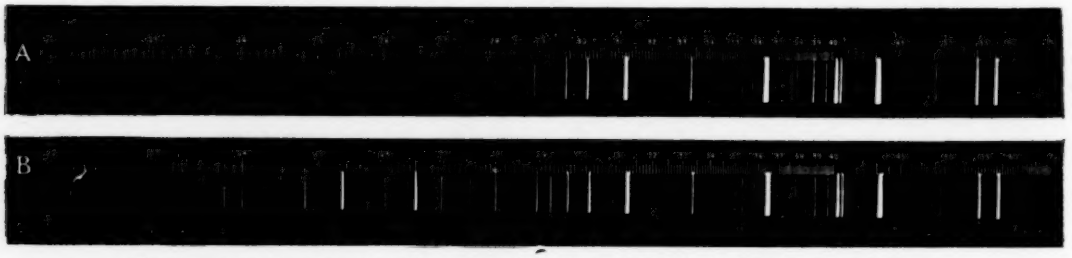
The idea that there is serious deterioration in "Vita" glass has originated through the publications of investigators who have subjected the glass to radiation from mercury-vapour lamps, which irradiate it with wave lengths far shorter than any we ever receive from the sun. It has been proved that exposure to the mercury vapour lamp is no guide to the effect of solar radiation upon "Vita" glass. The year selected for the investigation by the Board of Education was an unfortunate one, because the readings of ultra-violet radiation for the whole of these 12 months are very much below the average, and it should not therefore be assumed that because the results were not all that one could wish for, they would not be so under normal conditions.

Some of your readers will have seen by this time actual demonstrations of "Vita" glass, which go to prove conclusively that "Vita" glass admits the health-giving rays of the solar spectrum, to which ordinary glass is opaque, and I should therefore like to emphasise that all demonstrations of this kind are carried out with glass which has been completely stabilised.—I am, Sir, yours faithfully,

R. R. BYRNE,
Director, "Vita" Glass Marketing Board.

Aldwych House, London, W.C., Sept. 13th, 1929.

*** We have independent testimony that the loss in transparency when exposed to natural sunlight—briefly called solarisation—is not as great as has been made out. The current number of *Nature* (p. 441) contains a report of investigations at the Crown Glass Works at St. Helens, which show that glass which has been solarised by exposure to the quartz mercury lamp may even regain some of its lost transparency when exposed to sunlight. In America some work at the Bureau of Standards, confirmed by Dr. G. W. Caldwell and Dr. R. H. Dennett (*Jour. Amer. Med. Assoc.*, June 22nd, p. 2088), indicates that solarisation is complete in a few weeks, after which the permeability of the glass does not change. Both papers presuppose the feasibility of keeping the surface of the glass free from deposit.—ED. L.



Mercury-vapour lamp spectra: (A) screened by fully stabilised "Vita" glass; (B) unscreened.

SCHISTOSOMA BOVIS IN SOUTH AFRICA.

To the Editor of THE LANCET.

SIR,—Eight years ago you published [1] a letter from me drawing attention to the fact that *Physopsis africana* in Natal was infested with cercariæ which developed into the adult *Schistosoma bovis*. The occurrence of ova apparently identical with those of *S. bovis* in some patients who had acquired bilharzia infection, whilst bathing in pools infested with this parasite, suggested that the schistosome occasionally would choose man as its final host. Dr. E. C. Faust, who has made an exhaustive study of South Africa's larval trematodes, regards *Cercaria octadena* as the larval stage of this schistosome and observes that the cow is not necessarily the common South African host. More recent work has shown that both oxen and sheep are infested with *S. bovis* in the Eastern Province of the Cape, and the parasite would appear

[1] THE LANCET, 1921, i., 250.

to exist in the Pretoria district of the Transvaal as well as on the Natal coast.

Mr. P. L. Le Roux, of the Veterinary Department at Onderstepoort, who has been engaged in a valuable study of schistosomiasis in South African cattle and sheep, now tells me that he has observed that, where massive doses of tartar emetic are employed in the treatment of schistosomiasis, the parasites are soon found in a dying condition in various portions of the lungs. This interesting observation may explain why patients are so predisposed to temporary "colds," when larger doses than they can comfortably tolerate have been administered in the series. In the experiments which Dr. H. H. Curson, M.R.C.V.S., kindly undertook for me with freshly dissolved tartar emetic in the treatment of some fluke-infested sheep, he showed that antimonium potassium tartrate was a relatively non-toxic drug, if skilfully applied to sheep, as it is when administered to man.

I am, Sir, yours faithfully,

F. G. CAWSTON, M.D. Camb.,
late Streatfeild Research Scholar.

Durban, Natal, Sept. 3rd, 1929.

Obituary.

EDWARD PETRONELL MANBY, M.D., D.P.H. CAMB.

WE regret to record the death of Dr. E. P. Manby, a medical officer of the Ministry of Health, which took place suddenly on Sept. 20th at his house in London, just after the completion of his sixty-fifth year.

Edward Petronell Manby came of a medical family, his brother, the late Sir Alan Manby, being for many years physician extraordinary to His Majesty the King and surgeon-apothecary to the Royal Household at Sandringham. Edward received his training at Cambridge, where he graduated in 1883, and at Guy's Hospital, taking the conjoint qualification in 1886, the Cambridge M.B., B.C. in 1887, M.D. in 1891, and D.P.H. in 1894. Early in his professional career he became a resident medical officer at the Fountain Hospital of the Metropolitan Asylums Board, a post which he relinquished in 1896 on appointment as assistant medical officer of health at Liverpool. His work there did not pass unnoticed at Whitehall, and in 1900 he was invited to become a medical inspector to the Local Government Board; on the constitution of the Ministry of Health in 1919 he became a medical officer of that Department. From 1891 to 1900 he was lecturer in public health in the Liverpool University, and later in his career he held examinerships in public health in the Universities of London, Leeds, and Liverpool.

Dr. Manby's service with the central health authority extended over a period of nearly 30 years. He took his share in the routine inspection of the areas of local sanitary authorities and was entrusted with special inquiries of considerable importance, notably one into the conditions under which milk is distributed in this country. For the last ten years he had been engaged in the supervision of poor-law institutions in London and the home counties, and his special knowledge of this field of work was so valuable, especially in view of the changes occasioned by the Local Government Act of 1928, that his period of service was extended beyond the ordinary age of retirement. His life was, in fact, as one of his colleagues writes, devoted to public service, for which he had many qualifications, chiefly perhaps a robust common sense, sound judgment, and a hearty dislike of fads of all descriptions. Display and a desire for limelight had no place in his composition. He knew his job and he could do it, and he was content to let the results speak for themselves. Though he never went out of his way to court popularity he was much liked and respected by those with whom he worked. Dr. Manby was an enthusiastic golfer and lawn tennis player, and it was no easy matter to defeat him in either game, even during his last summer. He was a man of wide interests and at one time something of an authority on old furniture.

Dr. F. N. Kay Menzies writes: "Dr. Manby's sudden death is an irreparable loss to the poor-law medical service, especially of London. It is made doubly so by the fact that his old friend and colleague, Dr. Meredith Richards, was compelled to resign his position at the Ministry of Health in the spring of this year owing to serious illness. Manby and Meredith Richards knew more about poor-law medical work than any other medical men in existence, and the fact that they have both been lost to the service within the last few months is nothing less than a national misfortune. At a time like this their wide and matured experience, wise discretion, and sound judgment would have been of incalculable assistance to all those medical officers of health who will shortly be called upon to undertake responsibilities in connexion with the transfer of poor-law medical work to public health authorities. Manby's knowledge and experience of poor-law medical problems in the metropolis was profound and intimate and he was held in high esteem by the medical superintendents of the infirmaries, by whom his loss will be deeply regretted. His duties were often of a most difficult nature, requiring great patience and wisdom. He was always easily accessible, and could always be counted upon to give of his best in any direction which might be helpful to his colleagues."

Dr. Manby leaves a widow and one son.

JOHN MALLET PURSER, M.D., D.SC. DUB., F.R.C.P. IREL.

Dr. John Mallet Purser died on Sept. 18th at his residence in Dublin, being within two months of completing his ninetieth year. He had suffered some severe illnesses within the past few years, but his extraordinary vitality brought him through, and although he was somewhat enfeebled in body his mental abilities had remained unimpaired.

Purser was educated at Trinity College, Dublin, and took his medical degrees in 1863. He subsequently took the Licences of the King and Queen's College of Physicians of Ireland and of the Royal College of Surgeons in Ireland, and in 1876 was elected a Fellow of the King and Queen's College of Physicians. From the beginning of his career he was a teacher. He held at once the posts of professor of anatomy and physiology in the Carmichael School of Medicine and lecturer in ophthalmology in Dr. Steevens' School. In 1870 he was appointed surgeon to the City of Dublin Hospital, a post which he soon exchanged for that of physician to the same institution. His career, however, took a definite line with his election in 1874 to the King's Professorship of the Institutes of Medicine in the School of Physic, Trinity College. He held this post, together with that of clinical physician to Sir Patrick Dun's Hospital, until 1901, when he decided to retire from active work. Nevertheless, in 1917, on the death of Dr. James Little, he consented to accept the chair of the Regius Professor of Medicine in Dublin University. In 1925 he retired from this last official connexion with Trinity College. His interest in the College did not cease, however, for shortly afterward he made it a gift of £10,000 to be employed for the advantage of the School of Physic and the other science schools of the College.

A bare recital of the offices held by Purser gives no conception of the part he played in the development of the modern school of medicine in Dublin. At the time of his appointment to the chair of the Institutes of Medicine the Dublin School was still under the dominance of the purely clinical ideas of Groves and Stokes. The influence of the latter, great as it had been and useful in its time, had now become a check on the introduction of ideas from any other

source than the bedside. There were, it is true, grumblings against the dead hand of observational medicine which prevented advance. Purser made his position clear immediately on his accession to the chair by indicating that he intended to interpret "the Institutes of Medicine" as physiology and histology. Prior to this there was no regular instruction in physiology in the Dublin school, the previous professors having lectured in medicine. To his instruction in physiology and histology Purser added a voluntary class in pathology, which he conducted, unpaid, for more than 20 years, until the teaching of pathology was put on a regular basis in the school by the appointment of Dr. A. C. O'Sullivan as lecturer. He retired from private practice but performed the duties of clinical physician at Sir Patrick Dun's Hospital. It is difficult to say whether he shone most as lecturer in physiology or as clinical teacher. His ideas were clear and distinct, and his exposition of them lucid. He did not overburden his lectures with experiments, though employing them when they served to illustrate his subject. He had an unusual gift of logical thought, which made it easy for any intelligent student to follow his lectures and to carry away a sound knowledge of the essentials of physiology. His clinical teaching was, in effect, physiology (and pathology) illustrated in the living subject. He had the gift of conveying to his class the reasoning by which he passed from the signs and symptoms to the underlying functional and anatomical changes. Medicine was to him, and to his disciples, a science, incomplete, it is true, but always approaching completion. In treatment he was a sceptic. He had little belief in drugs as therapeutic agents. He was known to have said a good word for opium, and to have admitted that quinine had its uses, but for most drugs he cared nothing. The kind of reasoning on which pharmacology was built at that time excited his scorn. Of a book by Lauder Brunton he wrote a devastating review. No man distinguished more clearly between hypothesis and established fact. One consequence therefrom is that little if any of his positive teaching of 40 years ago is to-day unsound; it has been supplemented by the advance of knowledge, but rarely has it been falsified. This attitude toward medicine is a far step from that of the great Dublin clinicians, and Purser is rightly regarded as the leader in, and father of, modern medicine in Dublin. It was fortunate for Irish medicine that such a man was found at the moment when the new step was necessary. It is true that he wrote little. For this there were two reasons. His teaching duties kept him busy, and he read enormously that he might be fitted to teach progressively. But, more important than this, was the critical attitude which prevented him publishing anything to which he could not assign a high positive value. He published an admirable "Manual of Histology" in the early 'eighties, but he never troubled to issue a second edition.

Personally Purser was reserved, retiring, and modest. He disliked every kind of publicity. For example, he declined nomination for the Presidency of the Royal College of Physicians of Ireland when it was offered to him, on the ground that he was a physiologist, not a physician. His students were afraid of his sharp tongue—for no one could rebuke pretence or presumption more effectively—but they respected his conscientious performance of duty and his great ability as a teacher and man of science. As they knew him better the fear diminished and the respect increased. Those who came to intimacy with him realised the generosity of temper, the clear simplicity, and the wide range of culture. His leisure—scanty as it was during his tenure of the professorship—was given to reading, to travel, to art. In 1901, when Purser resigned the King's Professorship, his old pupils established a medal in the school in commemoration of his tenure of office, and the John Mallet Purser medal is awarded each year to the best student in physiology. Dr. Purser was unmarried.

Medical News.

UNIVERSITY OF LONDON: *University College.*—Forthcoming public lectures include a Rickman Godlee Memorial Lecture, by Viscount Grey of Fallodon, at 5.30 P.M. on Thursday, Nov. 7th; one on Medicine in the Days of Shakespeare, by Dr. Herbert Spencer, at 2 P.M. on Monday, Nov. 25th; and four on Secretion of the Digestive Juices, by Dr. R. J. Brocklehurst, at 5 P.M. on Mondays, Oct. 14th, 21st, and 28th, and Nov. 4th.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Demonstrations of specimens will be given in the theatre of the College at 5 P.M. on Fridays, Oct. 18th and 25th, and Nov. 1st, by Sir Arthur Keith, F.R.S.; and at the same hour on Mondays, Oct. 21st and 28th, and Nov. 4th, by Mr. C. P. G. Wakeley. They will be open to advanced students and to practitioners.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.—Courses of lectures have been arranged by the Institute from Oct. 10th onwards, and particulars may be had from the Director of Studies (Mr. Sydney Hooper), 88, Kingsway, London, W.C. 2. Forthcoming courses include six lectures on Mind and Nature, by Prof. L. J. Russell; six on the Interpretation of Development and Heredity, by Mr. E. S. Russell, D.Sc.; and a series entitled an Introduction to Philosophy, by the Director of Studies.

ST. MARY'S HOSPITAL POST-GRADUATE COURSE will be held as usual during the first week-end of the autumn session. The 12 lectures, which are open to all medical practitioners without fee, will be held in the library of the Medical School (except the lantern lectures, which will be held in the Physiology Theatre) on Oct. 4th, 5th, and 6th. Particulars will be found in our Medical Diary.

HOSPITAL DINNERS.—The annual dinner of *King's College Hospital* will be held at the Connaught Rooms, Great Queen-street, London, W.C., on Wednesday, Oct. 2nd, at 7 for 7.30 P.M., with Dr. H. Willoughby Lyle, Dean of the Medical School, in the chair. As we have already announced, the centenary session will be opened at the Medical School, Denmark Hill, at 2.30 P.M. on the same day.—The *Westminster Hospital* dinner will be held at Grosvenor House, Park-lane, W., on Tuesday, Oct. 1st, at 7 for 7.30 P.M., with Mr. Stanley Dodd in the chair.

LONDON HOSPITAL MEDICAL COLLEGE.—The Schorstein Memorial Lecture will be delivered by Dr. A. F. Hurst on Friday, Nov. 8th, at 4.30 P.M., in the Bearstead Clinical Theatre. Dr. Hurst has chosen as his subject Precursors of Carcinoma of the Stomach, and all members of the medical profession are invited to attend.

ROYAL DENTAL HOSPITAL SCHOOL OF DENTAL SURGERY.—A conversazione and prize distribution will be held at this school, in Leicester-square, London, W.C., on Wednesday, Oct. 2nd, at 8 P.M., when Dr. William Hunter will preside and give an address to the students.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The Council have completed the purchase of a freehold island site on the north side of Queen-square, Holborn, London, W.C., where it is proposed that the new premises of the Institute shall be erected.

COURSES IN GENITO-URINARY DISEASES.—At St. Paul's Hospital, Endell-street, Shaftesbury-avenue, London, W.C., a series of lectures on genito-urinary diseases will be given at 4.30 P.M. on Wednesdays from Oct. 2nd to Nov. 27th. Practitioners or students wishing to attend these lectures or the practice of the hospital may get further information from the secretary.

UNIVERSITY OF BIRMINGHAM.—Sir Farquhar Buzzard will deliver an address to students, entitled Arrogance and Ignorance in Medicine, on the occasion of the annual distribution of prizes on Tuesday, Oct. 1st. The ceremony will take place at 4.30 P.M. in the medical theatre of the University, Edmund-street.

UNIVERSITY OF DURHAM, COLLEGE OF MEDICINE.—The Duke of Northumberland, Chancellor of the University, will address the students in the College of Medicine, Newcastle-upon-Tyne, on Oct. 11th, at 4.15 P.M., on Some Scientific Theories and their Foundations at the opening of the winter session. A dinner will be held the same evening at the Central Station Hotel, Newcastle-upon-Tyne, at 7.15 for 7.30 P.M., when the Chancellor will be officially welcomed by the governors, Council, and staff of the College, and the University of Durham Medical Graduates' Association.

SURGICAL INSTRUMENT MANUFACTURERS ASSOCIATION.—The annual dinner of this Association will take place at the Holborn Restaurant on Friday, Oct. 11th, at 6.30 for 7 P.M.

FOOT HOSPITAL FOR MANCHESTER.—A new foot hospital was opened on Sept. 21st by the Dean of Manchester. The hospital is in Upper Brook-street, and has been established by the Incorporated Society of Chiropodists. It will be open in the evenings to suit working people, and will be carried on entirely by voluntary workers.

POST-GRADUATE COURSE AT THE LONDON HOSPITAL. It has been suggested that a post-graduate course for old students of the London Hospital should be held during the week of the annual dinner, which is arranged for Thursday, Oct. 17th, at the May Fair Hotel. Such a course will be held if there is enough demand, and the probable dates are Oct. 16th, 18th, and 19th.

QUEEN ALEXANDRA HOSPITAL, COSHAM.—The Committee appointed by the Minister of Pensions to inquire into the administration of this hospital is willing to consider relevant statements by patients, ex-patients, and others. They should be addressed to the Secretary of the Committee, Mr. R. Herbert, at 18, Great Smith-street, London, S.W. 1.

MANCHESTER WELFARE CENTRES.—The Manchester Corporation Public Health Committee have asked the city council for authority to assume control of three child welfare centres at Withington, Chorlton-cum-Hardy, and Didsbury—the only welfare centres in the city which still remain under the control of the School for Mothers.

DUDLEY MATERNITY HOME.—Last week the Countess of Harrowby opened a new maternity home and a nurses' home erected at a cost of over £30,000 by the Dudley Board of Guardians. The maternity home is a one-storey building intended to form an integral part of the large hospital which it is hoped to erect on the site. There are 11 beds in three wards, and a single-bed separation ward. The nurses' home provides housing for 62 nurses and probationers.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Sept. 30th, to SATURDAY, Oct. 5th.—BETHLEM ROYAL HOSPITAL, S.E. Tues. and Sat., 11 A.M., lecture-demonstrations in Psychological Medicine.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. Special Course in Gastro-enterology. One week only. Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Sept. 30th.—2.30 to 5 P.M.: Medical, Surgical and Gynæcological Clinics. Operations.

TUESDAY, Oct. 1st.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

ST. MARY'S HOSPITAL POST-GRADUATE COURSE.

FRIDAY, Oct. 4th.—11–11.45 A.M., Prof. F. S. Langmead: Graves's Disease. 12–12.45 P.M., Dr. T. C. Hunt: Recent Aids in Diagnosis of Some Common Diseases. 2.15–3 P.M., Mr. Aleck W. Bourne: The Action of Certain Drugs on the Uterus in Labour (Lantern Lecture). 3.15–4 P.M., Dr. A. Hope Gosse: Lantern Demonstration concerning Diseases of the Chest.

SATURDAY.—10.15–11 A.M., Mr. Duncan C. L. Fitzwilliams: Treatment of Malignant Disease by Radium. (With Epidiascope.) 11–11.45 A.M., Sir William Willcox: Catarrhal Jaundice. 12–12.45 P.M., Dr. Robt. Hutchison: Common Dyspepsias of Childhood. 2.15–3 P.M., Mr. T. G. Stevens: Retention of Urine in Women. 3.15–4.15 P.M., Dr. Albert Eidinow: Clinical Methods in Light Treatment.

SUNDAY.—10.15–11 A.M., Mr. R. M. Handfield-Jones: Pitfalls in Urological Diagnosis. 11–11.45 A.M., Dr. C. M. Wilson: Diabetes. 12–12.45 P.M., Mr. V. Zachary Cope: Abdominal Pain.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

THURSDAY, Oct. 3rd.—5 P.M.: Dr. J. H. Stowers: Introductory Lecture.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Sept. 30th.—1.30 P.M.: Hearing Tests.

WEDNESDAY, Oct. 2nd.—1.30 P.M.: Examination and Diagnosis: The Sinuses.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 2nd.—4.30 P.M., Mr. H. P. Winsbury White: Stone in the Upper Urinary Tract.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Oct. 1st.—4.15 P.M., Mr. F. G. Wrigley: Acute Suppurative Otitis Media.

FRIDAY.—4.15 P.M., Dr. R. Prosser White: Some Problems in Occupational Dermatitis.

Appointments.

REDMOND, W. A., M.B., Ch.B. Dub., has been appointed Medical Officer, Ballyward Dispensary District, Co. Down.

SIMS, CARRIE, M.B., Ch.B. Birm., D.P.H., Medical Officer on the Staff of the Ministry of Health.

SPICKET, J. S., L.R.C.P. Lond., M.R.C.S., District Medical Officer, Haverfordwest Union.

THOMAS, D. M., L.R.C.P. Lond., M.R.C.S., Public Vaccinator for Greenwich District.

WILSON, H. F., Certifying Surgeon under the Factory and Workshop Acts for the Carnoustie District of the County of Angus.

Queen Charlotte's Maternity Hospital: DOLEMAN, F. T., L.R.C.P. Lond., M.R.C.S., Senior Resident Medical Officer; HUGHES, T. I., L.R.C.P. Lond., M.R.C.S., Assistant Resident Medical Officer; KINGSMILL, C. M., M.B., B.S. Lond., District Resident Medical Officer; and LEBEN, C., L.R.C.P. Lond., M.R.C.S., Resident Anæsthetist.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Mental Hospital.—Jun. Asst. P. £250.

Aberystwyth Infirmary and Cardiganshire General Hospital.—H.S., £200.

Albert Dock Hospital, Connaught-road E.—Surgeon.

Bath, Somerset and Wilts Central Children's Orthopædic Hospital, Coombe Park.—H.S. At rate of £120.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.S. Also Asst. H.P. Each at rate of £100.

Birkenhead General Hospital.—Cas. S. £100.

Birmingham, Dudley Road Hospital.—Jun. Asst. M.O. At rate £200.

Birmingham, Selly Oak Hospital.—Res. Physician. £400–£600.

Birmingham City Education Committee.—Asst. School M.O. £600.

Blackburn and East Lancashire Royal Infirmary.—Fourth H.S. £130.

Bootle Borough Hospital, Derby-road.—Hon. Asst. Gynæcological Surgeon.

Brighton, Royal Sussex County Hospital.—H.P. £150.

Bristol Dispensary.—Non-Resident M.O.

Cambridge, Addenbrooke's Hospital.—Hon. Asst. P.

Cambridge, Papworth Village Settlement.—Second Asst. M.O. £300. Also H.P. At rate of £100–£200.

Cardiff, Glan Ely Tuberculosis Hospital, Fairwater.—Asst. Res. M.O. £250.

Carmarthen Joint Counties Mental Hospital.—Jun. Asst. M.O. £300.

Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. Chief Clin. Assts.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Eastern Dispensary, Leman-street, E.—Physician.

Exeter, Royal Devon and Exeter Hospital.—Hon. Physician.

Gloucester, Gloucestershire Royal Infirmary, &c.—Hon. S. to Ear, Nose and Throat Dept. Also First H.S. At rate of £135.

Great Yarmouth General Hospital.—Sen. H.S. £150. Also Jun. H.S. £100.

Grosvenor Hospital for Women, Vincent-square, S.W.—Res. M.O. At rate of £100.

Highgate Hospital, Dartmouth Park Hill, N.—Third Asst. M.O. £350.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.

Hospital of St. John and St. Elizabeth, Grove End-road, N.W.—Res. H.S. At rate of £75.

Hull Royal Infirmary.—Asst. H.P. At rate of £130.

Isleworth, West Middlesex Hospital.—Res. Asst. Med. Supt. and Asst. M.O. £450.

Kingston and District Hospital.—Third Asst. Res. M.O. At rate of £250.

Larbert, Stirling District Mental Hospital.—Third Asst. M.O. £250.

Leeds Public Dispensary.—Jun. Res. M.O. £150.

Liverpool Hahnemann Hospital, Hope-street.—Stipendary M.O. At rate of £125.

Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.
London Homœopathic Hospital, Great Ormond-street, W.C.—Surgeon in charge of the Mechanotherapy and Orthopædic Dept.
London Jewish Hospital, Stepney Green, E.—Hon. Asst. Radiologist. Also Hon. M.O. in charge of Actino-Therapeutic Dept.
London Temperance Hospital, Hampstead-road, N.W.—Res. M.O. At rate of £175.
Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S. At rate of £150.
Newcastle-upon-Tyne Eye Hospital.—H.S. £200.
Nottingham City Mental Hospital.—Jun. Asst. M.O. £350 to £400.
Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150. Also Anæsthetist, £75.
Prince of Wales's General Hospital, Tottenham, N.—Sen. H.P. Sen. H.S., and Special H.S. Each at rate of £120. Also Jun. H.P., and Two Jun. H.S.'s. Each at rate of £90.
Princess Louise Kensington Hospital for Children, North Kensington.—H.P. At rate of £75.
Rotherham Hospital.—H.P. £180.
Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £150. Also Cas. O. £150.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Hon. Asst. Surg. Also Surg. Registrars. Each £105.
Royal Naval Medical Service.—Vacancies for Medical Officers. £452–£2350.
Saint Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. At rate of £75.
Sheffield, South Yorkshire Mental Hospital.—M.O. £400.
St. Peter's Hospital for Stone, Henrietta-street, W.C.—Radiologist. £25.
St. Stephen's Hospital, 369, Fulham-road, S.W.—Third Asst. M.O. £300.
Southampton Free Eye Hospital.—H.S. £150.
Stafford, County Mental Hospital.—Second Asst. M.O. £600.
Sudan Medical Service.—M.O. £E720.
Swansea Hospital.—H.S. £150.
West London Hospital, Hammersmith, W.—Hon. Registrar for Throat, Nose, and Ear Dept. House Officer for Children's Dept. At rate of £150. Asst. M.O. At rate of £450. Also three Jun. Asst. M.O's. Each at rate of £350.
Weston-super-Mare, General Hospital.—Res. H.S. £130.
Willesden General Hospital, N.W.—Ophthalmic S. Res. H.S. At rate of £100. Also Physician.
Winchester, Royal Hampshire County Hospital.—Res. H.S. At rate of £150.
Wolverhampton Royal Hospital.—Res. M.O. At rate of £150.
Woolwich and District War Memorial Hospital, Shooter's Hill, S.E. Res. M.O. £175. Also H.S. At rate of £125.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Ludlow (Salop), and Topsham (Devon).

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Districts of the Bath, Calne, Chippenham, Devizes, Frome, Hungerford, Malmesbury, Marlborough, Melksham, Newbury, Swindon, Trowbridge and Warminster County Courts (Circuit No. 52). Applications should reach the Private Secretary, Home Office, Whitehall, London, S.W., not later than Oct. 14th.

Births, Marriages, and Deaths.

BIRTHS.

CHAPMAN.—On Sept. 20th, at Marine House, Bridlington, Yorks, the wife of P. D. H. Chapman, M.B., B.Ch., of a daughter.

FITZSIMONS.—On Sept. 19th, at Albany-road, Cardiff, the wife of Dr. R. A. Fitzsimons, of a daughter.

FRAZER.—On Sept. 22nd, at Mowbray-road, Brondesbury, N.W., to Dr. Kathleen Frazer, the wife of R. B. F. Frazer, L.R.C.P., Barrister-at-Law—a daughter.

MUIR.—On Sept. 22nd, at Sussex House, Sutherland-avenue, W., the wife of J. B. G. Muir, M.B., B.S., F.R.C.S., of a son.

MARRIAGES.

JOHNSTON—ROOKE.—On Sept. 19th, at the Presbyterian Church, Camp Hill, Birmingham, William Macdonald Johnston, M.B., Ch.B., Crouch Hill, N., to Nancy Rooke, of Egbaston, Warwickshire.

MITCHELL—MCCONNELL.—On Sept. 4th, John Myles Mitchell M.B., B.Ch., B.A.O., to Adelaide Patricia, youngest daughter of T. E. McConnell, C.B.E., and Mrs. McConnell, of Belfast.

DEATHS.

ALLAN.—Thomas Sprot Allan, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., Lieut.-Colonel R.A.M.C. (T.F.) (retired) late Surgeon R.M.S. *Appam*, Elder Dempster and Co., Ltd. Age 65, at the "Robert Davies" Nursing Home, Liverpool, on Sept. 16th after an operation. Interred at Allerton Cemetery, Liverpool, on the 19th inst.

BOWHAY.—On Sept. 17th, at Yelverton, Devon, Albert Bowhay, M.D., late of Gunnislake, Cornwall, aged 67.

COOPE.—On Sept. 24th, of acute poliomyelitis, Jean Rosemary, aged 5¼ years, daughter of Dr. and Mrs. Robert Coope, of 13, Rodney-street, Liverpool.

MANBY.—On Sept. 20th, at Palace Gardens-terrace, W., Edward Petronell Manby, M.D., Med. Off., Min. of Health.

WILLIAMS.—On Sept. 17th, at Richmond, Yorkshire, Howell Williams, M.D., aged 84.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

"THE WEEKLY WEATHER REPORT."

FROM 1878 until February of last year a report on weather conditions was issued week by week by the Meteorological Committee. The place of these has now been taken by an annual volume which retains the original title. The first of these, now before us,[1] refers to the figures for the year 1928/29. The main feature of the report is a collection of statistics on the temperature, rainfall, and sunshine for a number of districts of the British Isles, from which long period normals for the different periods and districts have been calculated for each week of the year. The table of normals for mean temperature, number of rain days, rainfall, and daily duration of sunshine for each of the 12 districts of the British Isles and for each of the 52 weeks of the year is in fact based on observations for the 35 years 1881/1916. For each district the deviation from the normal during the year is shown in respect of temperature, rainfall, and bright sunshine. Observations at Kew Observatory for the 20-year period 1907/26, compared with the 35-year period 1881–1915, indicate that the summers in southern England have become cooler and the winters warmer in recent years. The records of bright sunshine, that is to say, sunshine sufficiently intense to make a charred trace on the card of a Campbell-Stokes recorder with a 4-inch spherical lens, indicate that smoke pollution may make itself felt at a considerable distance from its source. The sunshine expressed as a percentage of the possible duration for the year was in York only 28, while in Southport it was 33; for the winter the figures were 12 and 18 respectively. And this difference might be anticipated owing to the prevalence of westerly and south-westerly winds which carry the smoke of the industrial area away from Southport and towards York. This is only one example of the use to which the wealth of accurate information contained in this report can be put.

IRONSTONE AND LIGHTNING.

AT an inquest at Worth on Sept. 19th, on two people who had been killed by lightning on the previous afternoon, the theory was advanced that the lightning was attracted by an under-crop of ironstone rock which is to be found in a large area of North Sussex. Four men were working in a field picking potatoes when the storm broke, and they ran to an oak tree for shelter. The tree was not struck but two of the men, one aged 25, and the other 42, were killed; also two dogs. One of the other men said his legs felt numb for some time, and the shock was as though his knees had been hit by a sledge-hammer. The fourth, a boy, was not much affected. Dr. A. Grayling stated that the cause of death was shock from lightning. Evidence of the lightning having struck the men was to be seen by the curious arborescent marks upon their bodies. Dr. Grayling added that in some parts of Sussex there were quantities of under-crops of ironstone rock, and that would attract electrical discharge. It was possible that in some parts of the particular field there was such an under-crop. Dr. E. F. Hoare, the East Sussex coroner, returned a verdict of death from misadventure.

A CAUTIONARY NOTICE.

MEMBERS of the medical profession often receive begging letters from persons claiming to be either widows or daughters of doctors. When such letters are forwarded to the secretary of the Royal Medical Benevolent Fund for inquiry it may be found that the person is known in the office of the Fund as one not deserving of charity. In the interests of medical charity the secretary of the Fund asks that letters from persons unknown asking for assistance should be forwarded to him at 11, Chandos-street, London, W. 1, for inquiry and report.

[1] H.M. Stationery Office. 15*s*.

ASTHMA RESEARCH COUNCIL.—The Council's new address is 37, Russell-square, London, W.C. 1, and the telephone number Museum 3313.

NEW CASUALTY DEPARTMENT AT NOTTINGHAM.—The great increase in the number of accidents has made it necessary to enlarge the casualty department of Nottingham General Hospital. There are now separate entrances for walking and stretcher cases, an anæsthetic room, surgeries for men and women, an operating theatre, and two recovery rooms.